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Rocks, skulls and materialism: geology and phrenology in late-Georgian Belfast

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Short Title: Rocks, Skulls and Materialism

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Summary:

Recent years have seen the development of a more nuanced understanding of the emergence of scientific naturalism in the nineteenth century. It has become apparent that scientific naturalism did not emerge *sui generis* in the years following the publication of Charles Darwin's *On the Origin of Species* (1859), but was present, if only in incipient form, much earlier in the century. Building on recent scholarship, this article adopts a geographically focused approach and explores debates about geology and phrenology – two of the diverse streams that contributed to scientific naturalism – in late Georgian Belfast. Having provided the venue for John Tyndall's infamous 1874 address as president of the British Association for the Advancement of Science, Belfast occupies a central place in the story of nineteenth-century scientific naturalism. However, in uncovering the intricate and surprising ways in which scientific knowledge gained, or was denied, epistemic and civic credibility in Belfast, this discussion will

demonstrate that naturalism, materialism and the relationship between science and religion were matters of public debate in the town long before Tyndall's intervention.

Key words: geology, phrenology, naturalism, late-Georgian Belfast, civic politics

Introduction

In the past thirty years, long-established narratives concerning the encounter between religion and science in the nineteenth century have been problematized and nuanced.¹ That there was, in general terms, a nineteenth-century 'crisis of faith' is not in doubt. Nor is it doubted that the scientific naturalism espoused by figures such as T. H. Huxley and John Tyndall had the potential to trouble religious belief.² Recently, however, this picture has been complicated, and it now appears that the 'faith to doubt' narrative does not adequately capture the complexity of the cultural and intellectual transformations that occurred in nineteenth-century Britain.³ Historians of science have, for instance, queried the notion that scientific naturalism formed a stable, identifiable category of thought, or that scientific naturalists constituted a unified group, committed to the secularisation and professionalization of science in the late-Victorian period.⁴ Likewise, it has been established that unease about traditional forms of religious knowledge and authority and a fully formed 'scientific naturalism,' did not emerge *sui generis* in the years following the publication of Charles Darwin's *On the Origin of Species* (1859). Boyd Hilton has located 'a national crisis of faith' in the period 1825-50, rather than

later in the century, and James Secord has pointed to the ‘relatively muted’ reaction to the publication of Darwin’s *Origin*.⁵ Similarly, Adrian Desmond has demonstrated the presence of what could be termed a proto-evolutionary naturalism in ‘radical London’ during the 1830s and John van Wyhe has argued that the origins of scientific naturalism lay in the ‘phrenological naturalism’ promoted from the late 1820s by George Combe.⁶ It has, in short, become clear that a commitment to the investigation of natural and social realities that ‘ruled out recourse to causes not present in empirically observed nature’, an approach first labelled scientific naturalism in the 1840s, was present, in an incipient form at least, from a much earlier date.⁷ Indeed, while ‘scientific naturalism’ does not appear to be a category used before the 1840s, a commitment to studying nature without appealing to ‘supernatural’ agency was widespread and the extent to which this constituted a move towards a more thorough-going materialism that denied the existence of anything beyond matter was frequently contested.⁸ Whatever the case, a commitment to naturalism was linked both to scientific endeavour that has since been reified as ‘legitimate’, such as geology, and to knowledge-systems that have since been discredited, such as phrenology.

What follows is an attempt to develop a local perspective on debates over the intellectual and moral authority attached to natural knowledge in the early nineteenth century. Adopting a geographically focused approach, the ensuing discussion will attend to two disputes which took place within the particular context of early

nineteenth-century Belfast – the first concerning geology and the second concerning phrenology. This geographically-circumscribed approach provides the opportunity to lay bare some of the intricate and occasionally surprising ways in which scientific knowledge of nature gained, or was denied, both epistemic and civic credibility. Belfast may, of course, be said to occupy a special place in the emergence of scientific naturalism in the nineteenth century, it being where John Tyndall delivered his infamous 1874 address as president of the British Association for the Advancement of Science.⁹ But while the town's response to Tyndall has been much-discussed, the broader story of science in Belfast, particularly in the first half of the nineteenth century, remains obscure.¹⁰ Granted it is well-known that space for scientific discourse within the town was provided by a range of cultural and scientific societies with overlapping memberships, of which the most prominent were the Belfast Society for the Promotion of Knowledge (BSPK), est. 1792; the Belfast Literary Society (BLS), est. 1801; the Belfast Natural History Society, est. 1821 and later renamed the Belfast Natural History and Philosophical Society (BNHPS); and the Belfast Naturalists' Field Club (BNFC), est. 1863.¹¹ Yet while the stories of these societies have been detailed in commemorative volumes and institutional histories, the wider reach and civic context of the scientific debates they provided space for have only recently begun to be explored.¹² Addressing the ways in which the town's middle classes engaged, during the 1820s and early 1830s, with geology and phrenology – two very different knowledge systems, but

two systems which nevertheless attracted much attention at the time – will add significantly to our understanding of the cultural and intellectual history of nineteenth-century Belfast. More generally, it will shed light on the complicated negotiations concerning the relative authority of different forms of knowledge and demonstrate how such negotiations were inextricably inter-twined with institutional and civic politics.

What follows can, then, be read as an exercise in ‘localist’ history of science, an attempt to situate scientific knowledge and discourse within a particular urban context – in this case Belfast. Such an approach is not, of course, without its problems: as Secord has observed, ‘an emphasis on the local contexts of science can lead to parochial antiquarianism’.¹³ But attending to the local need not necessarily entail neglecting the translocal.¹⁴ While addressing the immediate Belfast context, and drawing on the work of historical geographers concerned with ‘speech spaces’ and the connections between ‘location and locution’, the ensuing discussion will seek also to place Belfast in broader contexts, and to tease out some of the connections linking its scientific community to wider British and Atlantic scientific worlds.¹⁵ As such, it seeks to respond to Secord’s call for a history of science which moves beyond an exploration of ‘local specificity’ and a reiteration of the well-established point that ‘knowledge is ineluctably local and variable’, and instead highlights the ways in which ‘every local situation has within it connections with and possibilities for interaction with other settings’.¹⁶

In terms of structure, the article will comprise four sections. Sections one and

two will address geology, first highlighting its prominence in the scientific life of Belfast and then turning to focus on a specific and hitherto unnoticed moment of geological controversy played out in the columns of the *Belfast News-Letter* in the opening months of 1832. Following this, sections three and four will explore what might be characterised as Belfast's phrenological moment. Although relatively short-lived, this moment, lasting from the 1820s to the 1830s, was an important one, in which attempts were made to popularise and establish the legitimacy of a 'new' system of scientific knowledge. This process will be explored first in general terms and then, more particularly, by tracing a debate, conducted in the pages of the *Guardian and Constitutional Advocate*, which was sparked by the visit to Belfast of the prominent German phrenologist Johann Gasper Spurzheim in June 1830. As will become clear, the knowledge systems of geology and phrenology, although different in focus and content, were by no means as dissimilar as they might at first seem. Both appeared to offer new knowledge and ways of understanding the world, both were presented by their proponents as sciences and both provided foci for heated public debate – debate which not only foregrounded the Belfast middle classes' awareness of, and engagement with, broader scientific developments, but which raised weighty questions concerning the cultural and moral 'priority' of natural knowledge.

Geology and Geologists in Late-Georgian Belfast

As is well known, the early nineteenth-century was an important, transitional period in the history of geology.¹⁷ Geological research and speculation as to the origins of the earth was in no sense ‘new’, but geology was disseminated and popularized as never before in the early nineteenth century.¹⁸ Attempts were made to establish its legitimacy as an authoritative system of knowledge and debates were sparked as some of its proponents – most notably, in the British context, Charles Lyell – presented theories which some religious readers, though by no means all, viewed as incompatible with the biblical narrative of the earth’s creation.¹⁹ How, then, were these developments received in Belfast, a largely Presbyterian town in which, by the 1820s, the influence of evangelicalism was pronounced? Did Belfast’s Presbyterians make accommodations for the novel findings of geology in their reading of Genesis, or did they view geology simply as a threat? Writing in the late 1990s, the cultural historian John Wilson Foster suggested that the latter was the case when he surmised that ‘Ulster, with its contentious Protestant divines, would have been a hotbed for physico-theological debate’.²⁰ Was this so, and how, moreover, were these debates played out in Belfast? Did the town’s cultural and intellectual societies provide space for geological discourse, and was this discourse invariably controversial in religious terms?

One manifestation of the spreading interest in geology during the first half of the nineteenth century was the establishment of regional geological societies. Following the foundation, in 1807, of the Geological Society of London, local societies were

established in Cornwall (1814), Dublin (1831), Edinburgh (1834), Yorkshire (1837), Manchester (1838), Glasgow (1850) and Liverpool (1859).²¹ Belfast boasted no such society, but evidence of its middle classes' willingness to engage with geology is not hard to locate. The BSPK, for instance, is known to have acquired works on geology and mineralogy, and to have amassed a collection of curiosities and antiquities, included in which were fossils, lavas and mineral samples.²² Likewise, the BLS established a collection of geological specimens, and several of its early members are known to have delivered papers on, or related to, geology. These members included James McDonnell, a prominent physician who delivered a series of papers on fossils, topography and mineralogy between 1802 and 1811; the Revd Dr William Richardson, an Anglican clergyman and corresponding member of the society, who offered 'Some curious observations on Cuvier's *Theory of the Earth*' in April 1815; and William Knight, Professor of Natural Philosophy at the Belfast Academical Institution (BAI), who spoke on 'primary rocks' in January 1818 and described the Giant's Causeway in December 1819.²³

That Knight spoke on the Giant's Causeway, most likely presenting material which had earlier appeared in his *Facts and observations toward forming a new theory of the earth* (1818), is particularly noteworthy.²⁴ As Alasdair Kennedy has demonstrated, as early as the late 1680s the Causeway emerged as a geological 'field site' and 'philosophical landscape' of signal importance and in subsequent years it

captured the attention of many, including, in the early nineteenth century, William Hamilton Drummond, minister of second Belfast Presbyterian Church and a founding member of the BLS.²⁵ Twelve years prior to Knight, Drummond had also discussed the Giant's Causeway within the context of the BLS, reciting a poem on the subject at a meeting held in March 1807.²⁶ Later published as *The Giants' Causeway: a poem* (1811), this work has been placed in a broader genre of 'topographical poetry', though not all were convinced, at the time, of the appropriateness of its subject matter.²⁷

'Topography cannot be made interesting, even by rhyme', the travel writer John Gamble observed, when discussing the poem in his *View of the society and manners in the north of Ireland in the summer and autumn of 1812* (1813), 'it is like hanging a garland of roses round the neck of a skeleton.'²⁸ Yet, whatever its poetic merit, *The Giants' Causeway* nevertheless serves to foreground local engagement with geology. Leaving aside its preface and detailed notes, both of which highlighted Drummond's personal familiarity with existing geological knowledge and debate, the third of its three 'books' dramatized an on-going dispute between Vulcanists and Neptunists regarding the way in which the Causeway's distinctive basalt columns had been formed.²⁹ That Drummond was addressing such matters is significant in itself, but still more significant is the fact that the debate's protagonists included two of the BLS's corresponding members – William Richardson and Richard Kirwin.³⁰ Both men had written in response to the Revd William Hamilton, whose *Letters concerning the northern coast of the county of*

Antrim, in Ireland (1786) offered a Vulcanist explanation which attributed the rocks to volcanic action. In turn, Kirwan's essays upholding the rival Neptunist position prompted James Hutton to further develop the Vulcanist thesis in his *Theory of the Earth* (1795), and thus Drummond's *Giants' Causeway* served to obliquely memorialise the BLS's connection – albeit at a remove, via its corresponding members – to an important Irish episode in geology's so-called 'heroic age'.³¹

Moving from the 1810s to the 1820s, further evidence of engagement with geology in Belfast can be identified among the younger generation of naturalists and specimen hunters who comprised the membership of the BNHPS. Established in 1821, this society sought to promote the study of natural history, broadly defined, and the first paper its members heard took the form of an overview of the development of mineralogy and geology.³² The author of this paper, presented on 5 July 1821, was James MacAdam, a founding member of the society and an enthusiastic geologist whose writings on the geology of Ulster later appeared in the *Journal of the Geological Society of Dublin*. Over the course of the next two years, MacAdam was to present four further geological papers to the society: 'On the geological appearance of the surface of the earth' (20 March 1822); 'On Basalt' (27 November 1822); 'On the basalt and volcanic appearance of the islands of Madeira and Tenerife' (26 Dec 1822); and 'On the asphaltum lake of Trinidad' (5 March 1823). Others spoke, during this early period, on fossils, volcanoes, the Giant's Causeway and 'the prismatic lava found at Etna', and in

June 1828 James Bryce, a teacher in the long-established Belfast Academy, made his début at the society, speaking 'On the earth's surface'. Thereafter, Bryce returned frequently to the subject of geology. In addition to a series of four introductory lectures on geology delivered between April and May 1830, he detailed the geology of Inishowen in December 1828, reviewed Andrew Ure's *New System of Geology* (1829) in April 1829 and spoke on Lyell's geology in October 1830.³³

On their own, the titles of these papers give little away. Indeed, they raise more questions than they answer. What, for instance, did Bryce make of the attempts of Ure, who had earlier been employed as Professor of Natural History and Philosophy at the BAI, to marry geology with the Mosaic record in his *New system*?³⁴ In addition to dismissing the theories of both Werner and Hutton, Ure theorised that an additional day of creation had occurred after the Mosaic flood and that the species created on this occasion differed from those that had previously existed.³⁵ Needless to say, few were convinced by this, and in a stinging critique, delivered during his address as the president of the Geological Society for 1830, Adam Sedgwick judged that Ure had 'shown neither the information nor the industry which might justify him in becoming an interpreter of the labours of others, or the framer of a system of his own'.³⁶ Did Bryce concur, or did he sympathise with Ure's attempts to come to an accommodation with geology? And more particularly, what did he have to say about Lyell's attempts to 'free the science from Moses'?³⁷

In the absence of comprehensive transcripts of the papers such questions cannot be answered in full, but abstracts surviving in the records of the BNHPS hint at the literature with which MacAdam and Bryce were cognisant, and offer clues as to the ways in which they thought about geology. From these, it appears that MacAdam understood geology, in both stratigraphic and speculative terms, as the branch of scientific knowledge that ‘informs us of the localities & order of stratification of Rocks, & also of the different theories that have been brought forward to account for their disposition.’ When discussing the science’s development, in July 1821, he drew on David Brewster’s *Edinburgh encyclopedia* (1808-30), William Thomas Brande’s *Outlines of geology* (1816) and Knight’s *Facts and observations*, but was sufficiently well-informed to touch upon the work of Nicolas Demarest, Benedict de Saussure, Abraham Werner, Georges Cuvier, James Hutton and Robert Jameson, amongst numerous others, before concluding that the Neptunist and Vulcanist positions, associated respectively with Werner and Hutton, were the ‘present prevailing theories of Earth’. Bryce, likewise, discussed the Wernerian and Huttonian theories in his paper on ‘the earth’s surface’, and the fact that he delivered papers specifically addressing the work of Ure and Lyell is telling, pointing to his awareness of current geological thought.³⁸

For Bryce and MacAdam, however, engaging with geology entailed more than keeping abreast of current theories. Both men were also active field geologists.

MacAdam, for instance, undertook field work in the region surrounding Belfast, taking advantage of the cuttings and excavations which accompanied the construction of Ulster's railway infrastructure, and Bryce died in the field in 1877, having fallen from a cliff at Inverfarigaig, near Foyers in Inverness-shire.³⁹ Likewise, both wrote on the geology of Ulster, publishing notes and articles on recent discoveries. Most notably, Bryce published a memoir in 1831, detailing the discovery of the fossilized skeleton of a Plesiosaurus in Carnmoney, a townland in Belfast's immediate hinterland.⁴⁰ Increasingly common from the 1820s onwards, such discoveries were, as Ralph O'Connor has argued, of significance insofar as they empowered geologists to 'stage the world before man'; as the 'fossil repertoire' expanded, the 'Age of Reptiles' was brought into view, and Bryce's report provided the occasion for a local articulation of this representative trope.⁴¹ Thus, commenting on the publication of the memoir, the *Belfast News-Letter* highlighted the peculiarity of the Plesiosaurus, noting that its genus was 'entirely fossil' and that, 'of all animals found in this state, it bears the least resemblance to any inhabitant of the present world.'⁴²

Linked to fieldwork and publishing – indeed, facilitated by these activities – MacAdam and Bryce also developed important networks of national and international geological contacts. The two were members of the geological societies of both Dublin and London, and Bryce's articles on the fossils of Antrim are said to have won him the friendship of two of the most prominent figures in British geology – Roderick

Murchison and Charles Lyell.⁴³ Further afield, the pair also possessed links, through the BNHPS, with prominent North American geologists, including the Scots-born merchant and philanthropist William Maclure. Upon visiting Belfast in 1824, Maclure was elected as an honorary member of the BNHPS and he brokered further American connections by entrusting MacAdam with forwarding a case of specimens gathered at the Giant's Causeway to Benjamin Silliman, professor at Yale College and editor of the *American Journal of Science and the Useful Arts*.⁴⁴ In due course, Silliman was also elected as an honorary member, and similar transatlantic links were established with a number of others, including Jacob Porter, author of a *Topographical description and historical sketch of Plainfield, in Hampshire County, Massachusetts* (1834), and Dr Jeremiah Van Rensselaer, author of *Lectures on geology; being outlines of the science, delivered in the New York Athenaeum* (1825). Closer to home, relationships were established with Sir Charles Giesecke, Professor of Mineralogy at the Royal Dublin Society and a one-time student of Werner, who was elected as an honorary member of the BNHPS in July 1826, and a 'Mr Hutton of Newcastle', this presumably being the Sunderland-born geologist William Hutton, a Geological Society of London fellow and author of *The fossil flora* (1831-37).⁴⁵

MacAdam and Bryce were, then, enthusiastic geologists whose activities and networks of connection not only highlight the prominence of geological knowledge and endeavour in the particular scientific landscape of early-nineteenth-century Belfast, but

enable that landscape to be situated within the wider worlds of British and North American geology. Yet, while it was an important component of the scientific life of Belfast's middle classes, geology was also a problematic one, particularly by the early 1830s, when the publication of Lyell's *Principles of geology* (1830-33) called into question the catastrophic geology then associated with figures such as William Buckland and used, at least in the British context, to confirm the historicity and universal extent of the biblical deluge.⁴⁶ But perhaps more significantly, Lyellian geology threatened to unsettle the 'Baconian compromise' between students of nature and students of scripture, or the interpreters of God's two books.⁴⁷ Although Lyell continued to operate with a strict demarcation between natural and scriptural knowledge, his empathetic avowal of the complete independence of geological investigations from 'Mosaic' cosmogony was read by some as a vote in favour of diluting or even dissolving the influence and credibility of religious forms of knowledge. Consequently, what could and could not be said about geology in Belfast was informed not just by disputes over the particulars of geological knowledge but also by a growing anxiety about the cultural and moral authority invested in natural knowledge.

Contesting Geology in Late-Georgian Belfast

In taking the story of Belfast's engagement with geology into the 1830s, we may

remain, momentarily, with James Bryce. As noted above, Bryce discussed Lyell's geology at the BNHPS in October 1830. From the abstract of his paper, it appears that Bryce did not, on this occasion, engage directly with the question of geology's compatibility with the biblical record. By contrast, when delivering a public lecture on geology in February 1832 he addressed the question head-on, arguing that the Mosaic record need not be affected by geological findings which suggested that 'diluvial formations' were 'not all formed by one deluge' and that geology was 'not opposed to scripture'.⁴⁸ As the *Belfast News-Letter* reported: 'In regard to the objection against Geology derived from the Mosaic account of creation, Mr. Bryce strongly denied that any two classes of truths can be at variance; for if the Mosaic record *really* contradicted the truths of Geology, then that record must fall.'⁴⁹

Bryce's clear articulation of the terms of the Baconian compromise to a respectable Belfast audience is not, on the face of it, particularly noteworthy. It was entirely conventional and was, unsurprisingly, 'received with unusual approbation by the audience'.⁵⁰ Yet Bryce's lecture, and the careful negotiation it embodied, was delivered during the context of a long-running local controversy – a controversy sparked by a perceived violation of the 'rules' of public discourse, and which threatened to undo the epistemic and civic equipoise that Bryce was so keen to maintain.

The controversy in question commenced on 6 January 1832, when the *Belfast News-Letter* published a communication from the Presbyterian minister John Edgar,

commenting on a public lecture which had been delivered three days earlier by the physician and social reformer Henry MacCormac.⁵¹ Staged in the Common Hall of the BAI, the lecture was intended as the first in a proposed series of ‘twelve or more lectures’, which would provide those willing to pay the one guinea subscription fee with an introduction to ‘everything of importance’ in the science of ‘popular chemistry’.⁵² When he came to present the lecture, however, MacCormac ranged far beyond chemistry and articulated his well-known heterodox religious views: he impressed upon his audience ‘that the only cause of pain, either of body or mind, is our ignorance of the laws of our nature’; and expressed his belief, anathema to orthodox Presbyterians, that ‘God intends to bring all his creatures to perfect knowledge and happiness’.⁵³

Later described as ‘a Calvinistic Presbyterian to the core’, it is not surprising that Edgar took exception to such ‘antisciptural’ views.⁵⁴ Indeed, he had done so before, earlier condemning MacCormac’s ‘heinous errors’ from his pulpit. On this occasion, however, what further infuriated Edgar was MacCormac’s affirmation that there was ‘clear proof that our world had been inhabited by a race of animals different *in organization* from its current occupants; and that the crust of our earth had undergone a series of changes each of which would require a period, in comparison of which our modern eras would dwindle into insignificance.’⁵⁵ Here, it seemed, Edgar was offering a straightforward objection to geological claims that called into question the creation of the earth in six days and which hinted at some kind of species transformism. Certainly

Edgar was confident that it would 'be easy to expose the extreme ignorance or arrogance which would assert it to be proved, almost to demonstration, that Geology, connected with Chemistry, had made discoveries overturning the usually received opinion respecting the age of our world'. Yet, in the end, the question of science was, he claimed, 'of secondary moment'. Instead, what really irked Edgar was MacCormac's 'breach of all the rules of propriety'. In 'wandering from the course prescribed, for the purpose of attacking what the great mass of the community hold sacred', MacCormac was guilty of 'a gross violation of all that an audience, collected under such circumstances, had a right to expect'.⁵⁶ Simply put, he had broken the protocols of a public 'speech space' by introducing, and making claims for the authority of theories which undermined the basis of his hearers' religious beliefs.⁵⁷

Had Edgar's letter appeared without response it would remain noteworthy on its own terms, insofar as it hints at contemporary concerns regarding what should or should not be discussed in public. However, the fact that it was not an isolated letter, but the opening salvo in a dispute which was to run for some four months, renders it all the more significant. Initially, this long-running dispute took the form of a two-way exchange between MacCormac and Edgar, but the two were soon joined by James Lawson Drummond and John Stevelly, professors of the BAI. Added to this, a number of additional correspondents chipped in, including Joseph Hurtley, chairman of the Belfast Co-Operative Society, and three anonymous correspondents: 'No Party Man',

‘Candidus’ and ‘An Edinburgh student of divinity’.⁵⁸ By the time of its close, in May 1832, what had started as a dispute between Edgar and MacCormac had drawn in several other figures, generated 43 separate communications and occupied hundreds of column inches. Dissecting this controversy provides the opportunity to explore the intellectual and institutional context of a major public dispute over the status of geological knowledge.

One recurrent strategy adopted by those wishing to support MacCormac’s geological claims was to appeal to the authority of leading geologists. However, just as frequently, those who sought to undermine MacCormac’s geological assertions appealed for ‘plain facts’. Relatively early in proceedings, MacCormac published the text of a letter he had received from Robert Jameson, Professor of Natural History at the University of Edinburgh, who attested that his views were ‘in perfect harmony with science, and also in accordance with scripture, so far as they bear on scientific subjects’, and that ‘Werner, Cuvier, Buckland, Sedgwick, and Conybeare, entertain the same opinion’.⁵⁹ Edgar responded with contempt, mocking the ‘laughable absurdity of treating us to Professor Jameson’s answer, without telling us what was the question proposed to him’, a reply that led an exasperated MacCormac to question whether or not science was ‘reduced to so low a pitch in Belfast, that no one can or will stand forward and testify what it is that Professor Jameson teaches, and thus rescue me from the influence of this abominable calumny’.⁶⁰ In response, James Lawson Drummond,

Professor of Anatomy and Physiology at the BAI and a founding member of the BNHPS, wrote in MacCormac's defence, observing that

were Professor Jameson, or any other Professor of Geology in Europe, to teach, that there had not existed for ages of indefinable duration before the creation of the human race, innumerable tribes of animals and plants most of which are now extinct, he would betray such an ignorance of the present state of science, and of positively ascertained matter of fact, as would render him the contempt of every man possessed of real knowledge of the subject.⁶¹

It was this that provoked a hostile reply from Drummond's colleague, the BAI's, Professor of Natural Philosophy, John Stevelly.⁶² Using language which linked moral character with scientific authority, Stevelly censured Drummond for his 'dogmatic style ... which seems to me so entirely unworthy of any one who has the least pretensions to the character of a man of science', and called on him to either disclaim his letter, or 'bring forward a clear and distinct statement of facts' and prove his assertions concerning geology.⁶³

Drummond and Stevelly aside, appeals to authority were not always successful in securing the intellectual high ground. Quite the reverse, when MacCormac sought to establish the reasonableness of his claims regarding the 'low antiquity of our species' by demonstrating that his opinions were 'so general as to have the sanction of the first

geologists of Great Britain, France, Germany, and America, the Professors of Science at all our Universities, including three or more Clergymen of the Church of England among the number', Edgar attacked him on epistemological terms.⁶⁴

Is it not a strange way for one who professes to teach the 'true Philosophy' to attempt to prove the existence of a discovery, by quoting a long list of names of men belonging to certain colleges and churches, who *said* they thought that the discovery had been made. Would it not have been much more consistent with the Baconian Philosophy for our Lecturer first to set a number of facts before us, or of witnesses who saw those facts, and then let us have a specimen of the inductive process by which Geology arrives at her discoveries with 'tolerable certainty.' Let us have facts, Sir, and not opinions, before we talk about 'certainty.'⁶⁵

Noteworthy here, is Edgar's reference to 'Baconian Philosophy', for, as Andrew R. Holmes has demonstrated, Baconian induction 'retained its iconic status and rhetorical authority' among Ulster Presbyterians 'interested in mental science, biblical interpretation and systematic theology' until well into the nineteenth century. But while Edgar's reference to induction thus had a particular local significance, appealing to the intellectual biases of those Presbyterians who were 'allergic to any form of theorizing or speculation not based on facts', it can also be seen to have a wider significance when situated within the broader context of contemporary debates regarding geology.⁶⁶

In light of Edgar and Stevelly's disdain for geological speculation and theorising, it is tempting to diagnose the dispute as a local expression of the struggle between 'scriptural' and old-earth geology. Certainly, this was a temptation that some contemporary observers succumbed to. Following the dispute from the distance of London, where he was preparing for the bar, James Emerson Tennent, later an M.P. for Belfast, declared Stevelly a 'fool' for having allied himself with 'that visigoth Edgar' and urged his relative, Robert James Tennent, to join Drummond and 'stick up for the auld Earth'. Conversely, William Dool Killen – orthodox Presbyterian clergyman and author of a hagiographic *Memoir of John Edgar* (1867) – observed later in the century that the dispute had concerned 'the exact amount of information which geology supplies', and asserted that Edgar had 'clearly shown that the conclusions of infidel geologists are absurdly premature, and that the Mosaic account of the creations remains unshaken.'⁶⁷ Quotable as they are, however, such summary judgements mask the difficulties involved in characterising the protagonists' positions within the varied intellectual terrain marked out by late-Georgian geology. Edgar might appear, on the surface, as a scriptural geologist, but things were not quite so clear-cut.

As Ralph O'Connor has noted, in the early nineteenth century, "geology was still a contested term". While a 'new intellectual community (represented by, among others, the core of the Geological Society of London) laid exclusive claim to the telling of pre-human earth history, and to the term "geology"', 'old-earth cosmology' was

challenged by an array of ‘literalist’ geologies many of which were penned by writers who believed themselves to be ‘upholding Baconian values against pseudo-philosophical obscurantism’.⁶⁸ Thus, while reflecting the intellectual particularities of Ulster’s Presbyterians, Edgar’s employment of the inductive method also chimed with broader ‘young earth’ thinking and this raises the question as to whether or not his attacks on the geology articulated by MacCormac were influenced by the work of the scriptural geologists. Answering this question is complicated by two factors. First, there is the fact that scriptural geology denotes not a single school of thought but rather an approach, and one which ‘produced a bewildering range of geologies’.⁶⁹ To inquire as to what extent Edgar drew on the work of scriptural geologists is therefore to invite questions as to what, precisely, is understood by scriptural geology. Secondly, and more significantly, the fact that Edgar employed the Baconian method as a rhetorical motif precluded him from referring to the work of those who may have influenced or reinforced his thinking: simply put, in castigating MacCormac for quoting the opinions of ‘authorities’ instead of presenting facts, Edgar restricted his own rhetorical resources, limiting the extent to which he could cite the writings of scriptural geologists. That said, Edgar was obliged to discuss the work of a number of ‘third parties’ when responding to MacCormac’s assertions and it is perhaps telling that, alongside Georges Cuvier, Jean-André de Luc, George Bellas Greenough and William Daniel Conybeare, he referred to the work of the scriptural geologist Granville Penn, which had ‘boldly reproved the

false philosophy of infidel geologists'.⁷⁰ But 'perhaps' is the operative word here. Neatly confirming O'Connor's observations that the 'battle-lines between literalist and non-literalist geologies were not always clearly drawn', Edgar also permitted himself to quote from John Bird Sumner's two-volume *A treatise on the records of the creation and on the moral attributes of the creator* (1816).⁷¹ Although the passage in question – 'It may be safely affirmed that no geological theory has yet been proposed, which is not less reconcilable to ascertain facts and conflicting phenomena, than to the Mosaic history' – might seem to buttress the literalist position, this work in fact 'accommodated Genesis 1 to an old-earth cosmology' and Sumner was attacked by the 'fiercely oppositional literalist' George Bugg.⁷² 'Mr Sumner, and Dr Buckland, and Mr Faber,' Bugg fumed, 'all change the plain and obvious meaning of the Bible narrative before they even pretend to believe it.'⁷³

Placed in a broader context, Edgar's interventions can, then, be said to reflect the complexity of geological debate in the early 1830s. The extent of his engagement with literalist geological writing is unclear and he was quite content to assert that the old-earth geology was compatible with Christianity. While he insisted, in line with a Presbyterian Baconianism, that the 'vague hypotheses' of geology were 'unsupported by one jot of substantial proof', he also declared that those same hypotheses 'were incapable, *though true*, of doing any hurt to Christianity'.⁷⁴ There was, however, one 'speculation', which, for Edgar, was particularly dangerous. In his lecture MacCormac

had asserted that, ‘previously to the creation of man, the earth bore food for plants and living beings, very differently organized from what we at present behold’. Was this, Edgar wondered, an approval of the controversial theory, associated with Lamarck and Geoffroy St-Hilaire, of progressive development: ‘I will not stop to inquire,’ he wrote pointedly, ‘whether by the use of the phrase “living beings very differently organized,” he [MacCormac] intends to express his belief in the materialistic doctrines – that animals have undergone a series of changes from less to more fully organized forms [...] from sea blubber on to oysters, and after a while through less and more intelligent species on to man’.⁷⁵ As it turned out, this rhetorical shot may not have been too wide of the mark. In responding to Edgar, MacCormac noted that while he did not ‘participate in the opinions’ of Lamarck and Saint-Hilaire, ‘progressive development ... may be true’ and it need not lead to materialism.⁷⁶

For all their importance, the epistemological and intellectual aspects of the dispute do not fully account for its duration or intensity. Other factors were in play, not least contests over the control of the educational establishment that hosted MacCormac’s lecture. This, as we shall see, prompts questions as to what Edgar objected to most in January 1832, the things MacCormac had said, or the fact that it was MacCormac who had said them, and had done so in a lecture delivered under the auspices of the Belfast Academic Institution. The same question might be asked, too, of the debate between Drummond and Stevelly. As the two were colleagues in the BAI,

the barbed nature of Stevelly's initial letter addressing Drummond is intriguing. It is certainly possible that Stevelly's intervention was motivated by a personality clash or by the faculty politics of the BAI. But whatever might be said about Drummond and Stevelly, it is clear that the MacCormac/Edgar dispute *was* linked closely to the BAI, insofar as it was bound up with a long-running controversy concerning the orthodoxy, or alleged lack thereof, of those who taught in it.

Opened in 1814, the BAI combined both a school with, from 1815, a collegiate department, influenced by the Scottish universities, to which the Presbyterian Synod of Ulster appointed a Professor of Divinity to provide instruction for its clerical students. During the 1820s, however, the BAI's relationship with the Synod of Ulster became increasingly problematic. In 1822, as Finlay Holmes has noted, the emerging leader of theologically conservative Ulster Presbyterianism, Henry Cooke, 'launched a tremendous attack upon Arian influences in the College', and the following years were marked by controversy.⁷⁷ Indeed, at the same time that the columns of the *Belfast News-Letter* were enlivened by geological disputation, a parallel dispute, concerning the views of the BAI's Professor of Moral Philosophy, John Ferrie, was taking place in the Presbyterian denominational publications the *Bible Christian* and the *Orthodox Presbyterian*.⁷⁸ Although seemingly unconnected to this controversy, Edgar and MacCormac's dispute over geology was linked, both directly and indirectly, to the broader controversies surrounding the BAI: directly, in the sense that MacCormac had

delivered his controversial lecture in the BAI and was ‘generally understood’ to have done so in a bid to establish his qualifications for a vacant professorship; and indirectly, in the sense that Edgar’s on-going attack on MacCormac provided Cooke with ammunition to use against the Institution.⁷⁹ At a meeting of the Synod of Ulster on 11 January, Cooke referred to MacCormac’s chemical lectures – along with James Lawson Drummond’s recently published *Letters to a young naturalist* (1831)– as evidence that ‘persons professionally connected with the Belfast Academical Institution’ were ‘inculcating ... unsound principles’.⁸⁰ As one hostile observer put it, in seeking to please the orthodox faction by publishing ‘Edgar’s donkeyisms on MacCormac’, the *Belfast News-Letter* had succeeded only in injuring the BAI ‘by giving that fiend Cooke an opportunity of quoting Edgar’s opinions of its heterodox & dangerous lectures.’⁸¹

If institutional politics helped to fuel the debate, so, too, did concerns about MacCormac’s political philosophy and, in particular, its implications for the provision of charity to the urban poor. As the exchange of letters continued through February, Edgar fastened again on MacCormac’s view that the physical and moral evils that inflicted humanity were ‘mainly’ due to ignorance of natural laws. Worse than a Lamarckian, Edgar now called MacCormac out as a propagator of the views of Robert Owen and Frances Wright.⁸² MacCormac’s involvement in the Belfast Co-operative Society was well known and he had publicly expressed views widely perceived as directly inspired by Owen. To associate him with Wright, not long after lurid

revelations about sexual impropriety among the community at Nashoba had surfaced, was yet more damning and aligned him not only with a socialist politics but also to a movement regarded as explicitly secularist and morally suspect.⁸³ In the face of Edgar's attempts to brand him a Red Lamarckian, MacCormac continued to insist on the compatibility of his views with true religion. God had, he explained in a later letter, imprinted on nature and society laws that would, when understood and followed, lead to human happiness. This conviction could, he urged, provide common ground between those of all opposing creeds; it was the only basis for civic harmony and the only solution to the problems faced by the rising numbers of urban poor.⁸⁴ For Edgar, however, MacCormac's appeal to the Deity and to Christianity was a pious gloss on a dangerous creed that ruled out divine revelation and 'the religion of Jesus'.⁸⁵

That a dispute purportedly about geology should have developed in this way is not particularly surprising. Several months earlier thousands had marched on Belfast's streets in support of reform in a procession led by the Belfast Co-Operative Society and the outbreak of cholera just a month or so into the dispute between MacCormac and Edgar underlined the plight of the urban poor and sharpened contests over the control of philanthropic and charitable work in the town.⁸⁶ MacCormac was heard to loudly claim that science was discovering nature's ways, whether in the realm of geology or political economy. It was science, therefore, that held the solution to the town's pressing problems. To Edgar's ears, this was tantamount to materialism and his persistent attacks

on the ‘vague hypotheses’ of geology being presented as established fact were entirely commensurate with attacks on a more general, and to Edgar, overweening confidence in natural knowledge.⁸⁷ Ultimately, the dispute took the form and persisted the way it did because of an anxiety that too much authority was being ceded to natural knowledge unilluminated by divine revelation.

Phrenology and Phrenologists in Late-Georgian Belfast

If geological claims sparked a debate about where the true source of moral authority lay it would be entirely reasonable to expect that promoting phrenology in a lecture series hosted, again, by the BAI, was bound to provoke an even greater storm of controversy. Yet, as will become apparent, this expectation will need to be modified to account for the varied reactions to phrenological science in late-Georgian Belfast.

A ‘combined theory of brain and a science of character’, which held that the brain consisted of a series of distinct organs to which faculties of the mind were linked, and that the relative power of these faculties could be identified by examining the exterior of the head, phrenology was frequently condemned as a species of godless naturalism.⁸⁸ Yet such dismissals do not do justice to its cultural prominence and scientific significance within the context of the early nineteenth century. As a number of scholars have demonstrated, phrenology was widely discussed during the 1820s and ’30s, at both the regional and national levels, and took a variety of forms, some more

amenable to conventional religious beliefs than others.⁸⁹ That it was influential is not in doubt. From Aberdeen to Portsmouth, provincial phrenological societies emerged across mainland Britain, and a dedicated *Phrenological Journal* was established in 1823.⁹⁰ Moreover, it has been argued that phrenology performed a significant role in the development of nineteenth-century scientific thought. Secord, for instance, has identified it as ‘the major agency for the introduction of naturalism into Victorian Britain’, and has noted that Robert Chambers’ pre-Darwinian evolutionary text, *Vestiges of the Natural History of Creation* (1844), ‘grew directly from phrenological soil’, while John van Wyhe has asserted that the spread of ‘phrenological naturalism’, which predated the scientific naturalism more readily associated with Darwinian evolution, ‘was one of the most influential ideological and cultural developments in Victorian Britain.’⁹¹

Given the prominence of phrenology elsewhere in Britain, it is scarcely surprising that Belfast experienced a ‘phrenological moment’ during the 1820s and ’30s. Without doubt, the apotheosis of this ‘moment’ occurred in June 1830, when the town was visited by Johann Gasper Spurzheim, a one-time student of Franz Joseph Gall, the Viennese doctor who had ‘invented’ the science.⁹² However, Belfast’s engagement with phrenology pre-dated Spurzheim’s visit by several years. As early as August 1809 the *Belfast Monthly Magazine* had made reference, in its round-up of foreign literature, to ‘Dr Gall’s theory of the appropriation of different parts of the brain to different

functions of the mind', and by the mid-1820s knowledge of the science had become widespread among the town's literary and scientific circles.⁹³ By this latter point, it is important to note, the character of phrenology had been altered. As phrenology's historians have long been aware, Gall's initial delineation of the science was modified by Spurzheim, who expanded the list of mental faculties from 27 to 33, altering their nomenclature and placing them in a 'hierarchical taxonomy of orders and genera'.⁹⁴ It was this more expansive version of phrenology which became influential in Britain in the 1820s and '30s, and which provided the basis discussions of phrenology in Belfast.⁹⁵

In part, the ascendancy of what Samuel Taylor Coleridge termed the 'Spurzheimian Scheme' was facilitated by the regular visits Spurzheim made to Britain during the 1810s and '20s.⁹⁶ But it also owed much to the endeavours of the Edinburgh lawyer George Combe, who had been attracted to phrenology after attending a demonstration by Spurzheim in 1816, and who, in Roger Cooter's judgement, transformed phrenology 'from an arcane theory of brain and character to that of a socially respectable scientific vehicle of "progressive" ideas on social life and organization'. Playing the role of a 'moralizing popularizer', Combe drew out phrenology's practical social implications, most notably in his best-selling study *On the constitution of man and its relation to external objects* (1828), which offered a 'literal "constitution" for social behaviour based on a politically symbolic constitution of mental organization', proposing, among much else, that the way in which Britain treated

its convicts be reformed.⁹⁷ Yet, while Combe strove to establish phrenology as socially and intellectually respectable, his efforts were only partially successful, and phrenology remained, for the religious, a potentially troubling form of knowledge. ‘Whether or not one took the short step from the idea of the brain as the organ of the mind to the idea of mind as material brain,’ Cooter has noted, ‘Gall’s reduction of mental phenomena to functions of organized matter could be seen to undermine the Cartesian rationale for the existence of God by undermining the dichotomy between mind and matter or body and mind.’⁹⁸ In short, phrenology could be seen as leading to materialism, and it was thanks in part to this that the editor of Belfast’s *Northern Whig* responded coolly when a correspondent urged him, in July 1824, to open his paper’s columns to ‘the communications of the friends and enemies of Phrenology’. Although conceding that it may ‘amuse, as a summer evening’s speculation’, the *Whig*’s editor dismissed phrenology as the subject of serious consideration: built upon ‘vague speculation, and uncertain hypothesis’ it failed to meet the standards of inductive methodology and , more problematic still, it led ‘directly to MATERIALISM and FATALISM’.⁹⁹

In foregrounding phrenology’s tendency towards materialism and its apparent incompatibility with the inductive method, the *Northern Whig* anticipated issues that were to be discussed at length in the weeks following Spurzheim’s visit to Belfast in 1830, albeit in the columns of a different paper, the arch conservative *Guardian and Constitutional Advocate*. At this earlier juncture, however, there was no debate, and the

Whig's intervention passed without comment. Yet, if none were sufficiently invested in phrenology by the mid-1820s to defend it publicly in the columns of a local newspaper, there were clearly some who had developed an interest in the new science. In January 1823, for example, Robert Patterson addressed the BNHPS on the subject of phrenology, providing his audience with a potted history of the science and its relation with earlier philosophies of the mind.¹⁰⁰ Beginning with conceptual reflections, Patterson moved, via a discussion of the ideas of Berkeley, Hume, Locke, Reid, Scott and Stewart, to Spurzheim and Gall, before concluding with some remarks on the Edinburgh Phrenological Society: here, then, was a man who had taken the time to familiarize himself with the new science, and to contemplate its philosophical antecedents.¹⁰¹ But if he was familiar with phrenology, it does not follow that Patterson was, in any clear-cut sense, an advocate or apologist for it. Quite the reverse, a statement he penned later, in February 1827, reveals him to have held significant reservations. Although convinced that phrenology 'should not be ridiculed because it differs from our pre-conceived ideas', and willing to assert that 'the Brain is the organ of the mind', he believed phrenology's doctrines were unproven and doubted its practical utility: 'as the system claims only the natural dispositions of man,' he observed, 'an individual may be so changed by education, as to render the development of the different organs a very inaccurate test of his character [...] hence considerable uncertainty must always prevail in its application to real life'. Far from advocating

phrenology, Patterson presented himself only as an interested observer: unwilling to stand as a ‘champion of Phrenology’, he would, at best, ‘attend the lists in which its friends & opponents are engaged, and endeavour to make “fair play” the motto of the combat.’¹⁰²

Patterson aside, there were a number of others in Belfast who were engaging with phrenology at this time. Indeed, Patterson’s sceptical statement on the science was written in response to a communication from an associate, one Robert James Tennent, who was endeavouring to gather support for a dedicated phrenological society.¹⁰³ Established a few weeks earlier, on 15 January 1827, the Belfast Phrenological Society (BPS) proved short-lived, enjoying an independent existence for just two years. By December 1828 a formal overture had been made to the BNHPS, and in due course it was merged with the larger and longer established society.¹⁰⁴ But if it was ephemeral in nature, the BPS remains significant for a number of reasons. On a very obvious level, it provides evidence of active engagement with phrenology in Belfast: the society’s members were not merely interested observers, but active participants who collected skull casts, busts and phrenological texts.¹⁰⁵ More particularly, the BPS offers an indication as to the scale of interest in phrenology, for it is known, during the course of its two year existence, to have attracted a membership of 44. This figure appears, at first glance, modest, but it assumes a greater significance when it is considered that the combined membership of the BLS for the period 1801-32 numbered just 57, and that the

membership of the BSPK, Belfast's oldest and largest cultural and intellectual society, stood at just 152 in 1828.¹⁰⁶ Above all, however, the BPS is significant insofar as it foregrounds the increasing respectability of phrenology. Given Robert James Tennent's involvement in its promotion, it seems likely that the society was an initiative of the younger men of the town. Yet, alongside such young men, the society's membership included 'seven medical men' and this, combined with the fact that the society was eventually merged with the BNHPS, points to a growing acceptance of phrenology among Belfast's professional and scientific classes.¹⁰⁷

Thus, by the late 1820s, it would appear that phrenology had been established, in Belfast, as a credible – or potentially credible – knowledge-system. Increasingly well-known among those with scientific interests, it had received some criticism in the columns of the *Northern Whig*, but not so much that the BNHPS felt it was unwise to incorporate the BPS in 1830. In short, by the late 1820s phrenology had achieved a degree of legitimacy in the Belfast context – the ground was well-prepared for Spurzheim's visit to the town.

Contesting Phrenology in Late-Georgian Belfast

As John van Wyhe has recently demonstrated, the lecture tours conducted by Spurzheim and other prominent phrenologists during the course of the 1820s and '30s were complex events. While lecturing provided their *raison d'être*, the lecture should, van

Wyhe argues, be thought of ‘in an expanded sense’: ‘we must remember’, he notes, ‘that the actual lecture was the peak of related activity beginning with the anticipation and discussions in a given location before a lecture, engendered by the advertisements, culminating in the lecture itself, and continuing with further social interaction in dinners or touring local institutions followed by local reviews, discussion, and debate after the departure of the lecturer.’¹⁰⁸ On the whole, Spurzheim’s visit to Belfast in May and June 1830 conformed to this pattern: while there is, admittedly, no evidence for his having toured local institutions, it is known that he attended a dinner held by the town’s Medical Society in the Commercial Hotel and his twelve-lecture series was well-publicised in the town’s papers.¹⁰⁹

Scheduled to run on successive Tuesdays, Thursdays and Saturdays, the lecture series commenced on 1 June, in the auditorium of the BAI, a highly significant space.¹¹⁰ As Belfast’s most prominent educational establishment, the BAI conferred credibility on the lectures and Spurzheim, seemingly aware of this, not only wrote to its managers, thanking them, as convention dictated, for permitting him to use their premises, but noted privately that ‘the influential men ... [of Belfast] behaved with great liberality towards me in offering the Lecture-room at the Academical Institution’.¹¹¹ As important as the venue, however, was the audience that gathered within it. Set at one guinea for the series and three shillings for a single lecture, admission charges no doubt limited the size of Spurzheim’s Belfast audiences.¹¹² But size was not everything: equally

significant, if not more so, was the audience's character. Indeed, while an early biographer judged that Spurzheim's Belfast audiences were 'but small', the more noteworthy point is that they were, in the words of the *Belfast News-Letter*, 'highly respectable'. As Spurzheim himself boasted, they included 'all the medical men of note, all the literary characters of Belfast, and the leading divines'.¹¹³ Delivered in a prominent venue, and attended by a range of well-known figures, Spurzheim's lectures were, then, important and highly visible events in the public life of late-Georgian Belfast. But how were they reported? To what extent did they engender debate on phrenology, and what was the nature of this debate?

On the whole, initial reports were favourable. First to comment was the *Northern Whig*, which published a brief report on Spurzheim's introductory discourse on 3 June. Although expressing a degree of scepticism as to phrenology itself, this report praised Spurzheim as a speaker, noting that his 'lively' lecture was 'interspersed with a variety of appropriate and entertaining illustrations.'¹¹⁴ A lengthier report, published four days later, on 7 June, struck a similar chord. While making clear that the *Whig* considered itself 'among the unbelievers' of phrenology, it nevertheless praised Spurzheim, noting that it was 'impossible to hear him without being delighted' and conceding that his arguments were 'supported in a style of elegant, and, at the same time, sober philosophical investigation'.¹¹⁵ Clearly, the *Whig* viewed Spurzheim as a respectable and impressive speaker, and while it retained reservations regarding what it

described as ‘the truth of his principles’ it is telling that it did not present them, as it had done in July 1824, as tending towards materialism. Quite the reverse, it conceded that phrenology, as expounded by Spurzheim, was ‘admirably calculated for enlightening the minds of his pupils, and leading them to more enlarged and sounder views of human nature.’¹¹⁶

Equally positive towards Spurzheim was the *Belfast News-Letter*. Having reprinted the *Whig*’s report of Spurzheim’s first lecture on 4 June, the *News-Letter* matched its tone in its own assessment, published on 8 June, of his third discourse.¹¹⁷ Spurzheim was, the paper noted, ‘a most interesting lecturer’. He had ‘evidently studied with profound attention the metaphysical systems which have been hitherto prevalent in the world’ and he succeeded in placing phrenology ‘in a point of view more rational and philosophic than that in which we had been accustomed to regard it.’ This served to convince the *News-Letter* that phrenology was ‘far from deserving that senseless ridicule which ignorance has cast upon it’. But if it was prepared to commend the science to the ‘candid examination of the public’, it did not follow that the *News-Letter* had been entirely convinced by phrenology and it sought clarification as to the precise ‘inductive process’ which underpinned Spurzheim’s arguments. What is, however, significant is the positive manner in which these reservations were couched and the *News-Letter*’s declaration that it was willing to be convinced by Spurzheim. ‘If he can prove to us that certain mental tendencies are invariably connected with particular

cerebral developments, we shall', it declared, 'become at once his attached disciples'.¹¹⁸

Viewed side by side, the reports of the *Northern Whig* and the *Belfast News-Letter* thus suggest the emergence of a consensus in which phrenology, if not necessarily accepted as proven, was judged as a respectable knowledge-system – a knowledge-system which merited serious attention and which was, in no sense, 'dangerous'. Indeed, the *News-Letter* explicitly dismissed claims that it led to materialism, arguing that they were 'no more applicable to it than they are to the received system in which the cerebral organization is recognized as necessary to the mind's discharge of its functions'.¹¹⁹ This consensus was, however, to be shaken later in the month when a third Belfast paper, the *Guardian and Constitutional Advocate*, offered its opinions on phrenology. While the *Northern Whig* and the *Belfast News-Letter* had engaged with Spurzheim's lectures directly, the *Guardian* did so indirectly. Ignoring the lectures themselves, it first signalled its opposition to phrenology obliquely, publishing an article entitled 'Interesting Observations Relative to Injuries Sustained in the Human Brain' on 18 June. Originally published some fifteen years earlier in another Ulster publication, the *Newry Magazine; or, Literary and Political Review*, and based on an article which had appeared in the *Edinburgh Review* in February 1815, this piece gave details of individuals who were discovered, upon death, to have had damaged or deformed brains, but who had, during life, exhibited no signs of mental impairment.¹²⁰ Insofar as they called into question the central phrenological

proposition that the brain was the ‘organ of the mind’, such examples were pointed.¹²¹ However, lest readers should miss the broader point – that the hypotheses of phrenology were highly questionable – the paper hammered it home more directly in a second article, in which it outlined, in detail, its reservations regarding what it termed the ‘alleged science’.¹²²

In accounting for these reservations, it is tempting to foreground political concerns. First published in 1827, the *Guardian* was a markedly conservative paper and it might therefore be suggested that its engagement with phrenology was coloured by the new science’s links with reform and political radicalism.¹²³ However while this is certainly plausible, the paper’s critique of phrenology made no mention of politics. Instead, it raised a series of epistemological concerns. Phrenology ‘explains nothing’, it asserted. It was a knowledge system ‘fenced around ... with evasions, or modes of escaping from the objections of an opponent, without refuting them by satisfactory arguments’, and its advocates were vague and ‘unphilosophical’ in their use of language. Worse still, ‘with respect to ideas, or the immediate objects of the human mind’, it violated ‘the analogy of Nature’. ‘We receive impressions from external objects by means of the organs of sense’, the paper argued: we see with our eyes and hear with ears, and we know, and are conscious, that it is through these organs that we do so. But the same could not be said of the organs – whether of destructiveness or constructiveness, pugnacity or benevolence – which were said, in the phrenological

scheme, to be formed ‘from the substance of the brain’. Of such organs, the *Guardian* contended, the mind was ‘perfectly unconscious’, knowing neither their location, nor their power.¹²⁴ Simply put, the *Guardian* rejected phrenology, but not superficially, because it was novel and could be construed as a threat to the established social order. Rather, it rejected it on the grounds of its perceived epistemological and evidential shortcomings.

Inevitably, such criticism did not go unnoticed. Indeed, there is some evidence that Spurzheim himself was aware of it: in his final Belfast lecture, delivered on 26 June, he touched upon the case of ‘H. L.’, a quayside porter who had fallen into the hold of a ship, injuring himself so severely that it proved necessary to remove ‘nine square inches’ of his skull, and whose story had been appended to the *Guardian’s* article. Remarkably, this individual was said to have made a full recovery and to have retained all his ‘desires, propensities or inclinations’, though the extent of his injuries and the implications of his case were the subject of much debate in the aftermath of Spurzheim’s lecture.¹²⁵ More significant, than the debate concerning ‘H. L.’, however, was that concerning the *Guardian’s* direct, epistemological critique of phrenology. This elicited a lengthy response from the *Belfast News-Letter*, which had earlier declared its willingness, if presented with ‘appropriate proof’, to become one of Spurzheim’s ‘attached disciples’.¹²⁶ Evidently, Spurzheim had not, in his lectures, presented such evidence, for the *News-Letter* did not go so far as to commit itself to ‘*unqualified*

advocacy' of the phrenological system in responding to the *Guardian*. Instead, it asserted that phrenology, if it was to be overthrown, must be overthrown by arguments 'very different indeed from any that our contemporary has yet adduced', and set about foregrounding the metaphysical and epistemological shortcomings of the *Guardian's* analysis.¹²⁷

Particularly problematic, the *News-Letter* argued, was the *Guardian's* description of ideas as 'the *immediate objects* of the human mind' and its reference to the existence of an apparatus 'to convey *certain notices derived from external objects* to the appropriate nerves whose office it is to transmit those *impressions* to the mind.' Such discourse was 'common to Locke and our older metaphysicians ... but every person who is at all acquainted with the present state of intellectual science, knows that it is discarded as not merely antiquated, but as having been a grand source of the Idealism of Norris, Berkeley and Hume.'¹²⁸ Equally problematic, was the *Guardian's* assertion that phrenology's evidence base was limited. Whereas the *Northern Whig* had, in 1824, suggested that phrenology failed to meet the standards of inductive methodology, the *News-Letter*, in replying to the *Guardian*, turned this argument around. In the *News-Letter's* analysis phrenology could, in fact, be positioned as an inductive science, and the *Guardian*, in complaining that only a few thousand (at most) of the earth's 'nine millions of human beings' had been phrenologically examined, had simply illustrated its own ignorance of the inductive method.¹²⁹ 'But it seems, that the

whole human race ought to be phrenologically examined before any such conclusions can be formed', the *News-Letter* mocked. 'Now, is our contemporary so slightly acquainted with the Baconian laws of induction as to be serious in such an assertion as this?'¹³⁰

In asserting phrenology's compatibility with Baconian methodology, the *News-Letter* was following a well-worn discursive path. As Cooter has noted, 'almost exclusively ... [phrenologists] considered themselves as following in the footsteps of Francis Bacon', and if this phrenological Baconianism was, to some extent, superficial, and 'paid scant attention to those aspects of Bacon's writings that supported careful analysis and inductive logic', it was no less influential for that.¹³¹ Yet, as common as it might have been, the association of phrenology with Baconianism can be said to have had a particular frisson in the Ulster context. As noted, Baconian induction provided a core intellectual underpinning for Ulster's Presbyterians. Thus, in making the case for phrenology's compatibility with the inductive method, the *News-Letter* can be said to have been employing a concept imbued, in Holmes' words, with 'rhetorical authority', in order to defend a knowledge system which had yet to secure its authority and which the *Guardian* had sought, in philosophical terms, to undermine.¹³² But there was more at stake in this exchange than the intellectual authority of phrenology. While the *News-Letter* defended phrenology from the *Guardian's* attack, it did not do so without qualification: phrenology remained, in its opinion, unproven. What was also at issue

was the intellectual authority of the *News-Letter*, vis-à-vis the *Guardian*.

With its references to idealism, induction and the works of Norris, Berkeley and Hume, the *News-Letter*'s response to the *Guardian*'s critique of phrenology was clearly the work of someone well-versed in 'intellectual science', and was most likely penned by the paper's young editor James McKnight.¹³³ Appointed as editor of the paper in 1827, McKnight had formerly been a student in the collegiate department of the BAI, where moral philosophy of a decidedly Scottish bent was taught by Drs William Cairns and John Young, graduates of Glasgow University.¹³⁴ Such teaching appears to have left a deep impression on McKnight – later in life, he asserted that 'Scotch metaphysics' provided his 'favourite reading' – and it is possible, in his response to the *Guardian*, to discern an ambitious young editor flexing his intellectual muscles and asserting his authority in the field of philosophy.¹³⁵ Having declared himself willing, in earlier articles, to be convinced by phrenology, McKnight had, in effect, been challenged by the *Guardian*'s detailed critique of the science and he responded by exposing the epistemological shortcomings of the rival paper's case and demonstrating his own mastery of metaphysics. Indeed, in disputing the *Guardian*'s metaphysical pronouncements, McKnight was defending the Scottish common sense philosophy of Thomas Reid as much as he was a more open attitude towards phrenology. His attack on the notion of ideas as 'immediate objects of the mind' echoes a central argument made by followers of Reid. McKnight appears to show little awareness of the shared

concerns but growing tensions between phrenology and a Reidian ‘science of man,’ that were evident elsewhere. It is interesting to note, too, that McKnight’s relative positive stance was published some months before a group of ‘evangelicals’ split from the Edinburgh Phrenological Society, a move that made it harder for Combe to avoid charges of heterodoxy and irreligion.¹³⁶

Of course, whether the *Guardian*’s critique of phrenology was consciously intended as an attack on the *News-Letter* is moot, but the possibility that it was is suggested by the circumstances leading to the paper’s establishment in 1827. While the young McKnight edited the *News-Letter*, the *Guardian* was edited by one James Stuart. An older man, Stuart had himself edited the *News-Letter* between 1821 and 1827 and had left to establish the *Guardian* after falling out with the *News-Letter*’s owners.¹³⁷ In all likelihood, the cause of this quarrel was political: whereas the *News-Letter* adopted a moderate-Whig position, sympathetic to reform in the late 1820s and early 1830s, Stuart’s new paper was characterised by a reactionary, Tory stance. Needless to say, whether or not this disagreement had any bearing on Stuart’s decision to attack phrenology is open to debate, but at the very least this immediate context suggests that it was a complex combination of factors, and not simply a desire to defend phrenology, that inspired MacKnight to respond to the *Guardian* in June 1830.

As was the case with the 1832 geology dispute, then, debate about phrenology in Belfast was not divorced from the wider social and political contexts the town provided.

This became yet more apparent when, early in July 1830, a third party, one ‘Philalethes’, entered the debate, submitting a lengthy letter in defence of phrenology, which was published in the *Guardian*.¹³⁸ That Philalethes is a pseudonym known to have been used by Rev Fletcher Blakely, a Presbyterian clergyman from Moneyreagh, a townland located in Belfast’s south-eastern hinterland, is significant, not only pointing to engagement with phrenology in the Ulster countryside, but foregrounding the overlap that existed between religious heterodoxy and phrenology.¹³⁹ While brought up in conventional, Calvinist Presbyterianism, Blakely moved towards Unitarianism after his ordination in 1809 and, during his ministry, Moneyreagh became known as a place ‘where there is one God and no devil’: such a man writing in phrenology’s defence would seem to illustrate Enda Leaney’s recent assertion that, in Ireland, circles of enlightened dissent were noticeably responsive to phrenology.¹⁴⁰ However, leaving aside its broader implications, ‘Philalethes’ intervention is of more particular significance insofar as it kept the phrenology debate alive and provided the *Guardian* with an opportunity to refine its earlier position and develop a new attack on the science.

On the whole, Philalethes adopted an approach similar to that of the *News-Letter*: he discussed the *Guardian*’s critique of phrenology in detail, highlighting and correcting areas where he thought it was mistaken. By way of a response, the *Guardian* appended a series of fourteen notes to Philalethes’ letter, in effect undermining his

arguments with paratextual apparatus. These notes renewed the attack on phrenology, shifting position and raising the issue of materialism. Hitherto, claims that phrenology led to materialism had been dismissed as irrelevant. As noted, the *News-Letter* had bluntly rejected the charge and the *Northern Whig*, though it had presented this argument in 1824, retreated from its earlier position, presenting phrenology as an enlightening knowledge system. Indeed, in its initial critique of phrenology, even the *Guardian* had explicitly declined to play the materialism card. Noting that phrenology's opponents 'frequently charge it with a direct tendency to *necessarianism* and *materialism*', it explained that it felt 'no inclination whatever to bring a charge of this nature against Phrenology and its professors.'¹⁴¹

While he found much to correct in the *Guardian's* critique of phrenology, Philalethes carefully applauded the manner in which it had dealt with the issue of materialism. Indeed, in what appears to have been a bid to establish common ground, he addressed the *Guardian's* editor directly, explaining that he was 'glad to find you vindicate Phrenology against the very puerile attempts which have been made to show that its doctrines tend to necessarianism and materialism.' However, this attempt at conciliation fell flat, for the *Guardian's* editor had changed his mind. As he explained in the second of the fourteen notes he appended to Philalethes's letter, he had, since publishing his initial critique, perused George Combe's *System of Phrenology* (1825), and had come to the conclusion that phrenology *did* lead to materialism, and did so

‘directly’. ‘So long as we conceived that its [phrenology’s] advocates employed the term organ so as to signify either an instrument wherewith the mind acts, or an instrument by which it exhibits or manifests its actions, powers, or propensities, or an indication or manifestation of those powers, &c.,’ he reasoned, ‘we did not perceive that it had the slightest tendency to propagate the doctrines mentioned above [necessarianism and materialism].’ But exposure to the work of Combe precluded such a reading:

... we now find that Phrenologists attribute to the brain-formed organs in question, (which they say resemble inverted cones, with their bases at the surface of the brain, and their apices in the medulla,) a power of acting on the mind in proportion to their size and energy!! They talk of the *effects* of the organs on the mind ... Thus the human soul, which, as Religion and Reason teach us to believe, is a spirit, an immaterial substance, is acted upon by thirty-six pulpy cones, shut up in the prison of the skull, which excite or restrain its volitions and its propensities, sometimes singly, and sometimes as if banded together in *holy* or *unholy* alliance.¹⁴²

In short, greater familiarity with phrenology had led to a greater awareness of its dangers, and the *Guardian* revised its earlier position, asserting that phrenology did lead to materialism.

Inevitably, Philalethes viewed this shift in position as disingenuous. Writing in

reply, he expressed frustration that the *Guardian*'s comments had shifted its 'ground of attack': 'it looks as if you were disposed not only to use every legitimate weapon against Phrenology,' he railed, 'but that you were also willing to enlist popular prejudice on your side.'¹⁴³ However, as the *Guardian* was quick to point out, Philalethes himself had sought, in his initial intervention, to alter the paper's opinion on phrenology and for him now to complain that the paper had done just that was disingenuous in its own right: 'our change of sentiment seems not to be agreeable to our correspondent', it noted sharply, 'but a change in an opposite direction would have been consentaneous to his hopes, and a matter which he would, we presume, have deemed rather a subject of praise than blame.' Thus, rather than retreating in the face of Philalethes ire, the *Guardian* restated its position. In so doing, it offered examples, drawn both from Combe's *System of Phrenology* and from a manuscript account of Spurzheim's Belfast lectures, but its case remained unchanged: it had discovered that phrenologists 'attribute to certain material organs ... a power of *acting on the mind* in proportion to their size and energy', and it adjudged this to be a theory of mind which, leaving no room for conceptions of the 'soul' or 'spirit', tended towards materialism.¹⁴⁴

With these final exchanges, the debate on phrenology drew to a close. Shorter and, in some respects, less complex than the geology dispute of 1832, it had lasted just a few weeks. Nevertheless, it prompts two general observations. First it is noteworthy that the *Guardian*, in condemning phrenology as materialism, was challenging an

emerging consensus which held that, whatever might be said about the ‘rightness’ of its claims, phrenology presented no significant moral or metaphysical dangers. This consensus was not just supported by the religiously heterodox but found able defenders among ‘orthodox’ Presbyterians. James McKnight is the case in point. What is remarkable here is his defence of phrenology on Baconian grounds even if, as a good Baconian, he continued to hold that the science remained unproven. This is strikingly different in tone and tendency to Edgar’s use of the same Baconian trope in his assault on MacCormac’s geological assertions. This consensus was also durable. In the long run, phrenology remained a legitimate subject within the BNHPS in the 1830s, and in 1836 James Lawson Drummond, the then president of the BNHPS, publicly supported George Combe’s application for the chair of logic at Edinburgh University, asserting that it was his belief that phrenology formed ‘the true basis of the science of the mind’.¹⁴⁵

Secondly, as with the dispute over MacCormac’s lecture, the debate about phrenology had a definite political bearing. It is hard to escape the conclusion that the *Guardian* assailed phrenology as materialist not so much because it was regarded as a threat to moral and religious culture but because, on reading *The Constitution of Man*, the reformist drift of phrenological science hit home. It could be argued, then, that phrenological ‘naturalism’ was, in late-Georgian Belfast, a political construct and a product of a heated dispute between two newspapers vying for cultural authority and

increased sales.

Conclusion

In 1837, several years after debates about the threatening or promising nature of geology and phrenology had passed, Henry MacCormac published *The Philosophy of Human Nature*, a wide ranging text that touched on many subjects, including phrenology, which he characterised as an ‘elaborate expression’ of materialism and condemned unequivocally. For MacCormac, materialism ‘cut away hopes ... of a futurity [immortality]’ and, in its phrenological form, reduced consciousness to ‘mere organic acts’. The soul, MacCormac maintained, was immaterial, though nothing could be known about its ‘substance’.¹⁴⁶ That MacCormac opposed phrenology is in certain respects surprising. George Combe’s lengthy efforts in ‘*The Constitution of Man* to demonstrate the harmony between phrenology and scripture seem entirely compatible with, even directly supportive of, MacCormac’s emphasis on natural laws and on ‘practical Christianity’.¹⁴⁷ Yet, while MacCormac’s politics differed radically from the *Guardian* he was, if anything, more direct in his condemnation of phrenology as pure materialism; on the subject of phrenology, the Owenite and the arch-conservative were, oddly, in agreement. This incongruity is not explained by a change of mind. MacCormac remained resolutely committed to the view that natural laws – including those regulating the human mind – were both knowable and essential to secure social

progress. If anything, MacCormac was far less concerned than Combe to reverence the Christian scriptures. Revelation, to MacCormac, was hidden not in a divinely inspired text but in the book of nature and was deciphered using the methods of science. It is reasonable to think that it was MacCormac's Owenite politics – which gave greater scope for radical human improvement through education than phrenology would allow – that motivated his resort to the materialism slur.

Yet, whatever motivated them, the complexities involved in MacCormac's opinions demonstrate just how difficult it is to reconstruct the genealogies of the scientific naturalism that emerged later in the century. It also reminds us, as recent work has increasingly done, that 'scientific naturalism' conceals a morass of metaphysical reasoning that cannot be reduced to a stipulative definition. Indeed, the disputes over geology and phrenology in Belfast do also point to continuities and similarities between the late-Georgian and late-Victorian periods. There clearly *was* a contest for cultural authority between those who wished to wrest science from the controlling influence of dogmatism. For individuals like Edgar, Stevelly and the editors of the *Guardian*, the infidel doctrine of materialism represented a real threat, while for MacCormac and Drummond, religious dogma threatened to impede the progress of science. Knowledge of nature, and nature's laws, was the authoritative source for pursuing social progress and for establishing civic harmony. This was naturalism of a sort, even if it was one that acknowledged that nature was the ordered expression of the

Deity.

We have, then, in late-Georgian Belfast, two examples of discussions that hinged around the relationship between science, religion and civic society, and that were sparked off by public lectures. There are, obvious differences notwithstanding, echoes here of the better-known debates that occurred in the town over four decades later. As is well known, Belfast's clergymen took to their pulpits to decry the perceived materialism of the address John Tyndall delivered as president of the British Association for the Advancement of Science for 1874. But while this address and the ensuing controversy constitute the best-known episode in the history of science in Belfast, it is one that requires greater contextualisation. As the preceding discussion has demonstrated, sciences that for a variety of sometimes conflicting reasons attracted the epithet 'materialist' were subjects of public discussion in Belfast long before Tyndall delivered his address or Darwin published his *Origin of Species*. Indeed, even progressive development was a matter of public debate in 1832. That such issues could be debated is noteworthy. It is also noteworthy that a purported association with materialism was not sufficient to frustrate work in the field of geology or phrenology. Within the BNHPS, geology continued as a regular, indeed increasingly important, subject of debate in the months and years following the 1832 controversy, and phrenology, while it was later to descend to the status of freak-show entertainment, remained a legitimate subject of investigation until at least the mid-1830s. In short, many in Belfast who were

concerned with science appear either to have cared little about the supposed materialist consequences of their intellectual endeavours, or to have disagreed with the proposition that their pursuits had such consequences. That this was so, suggests that, when thinking about science and scientific endeavour in Belfast, we need to look beyond the outraged clergymen who spearheaded the attack on Tyndall, and pay more attention to those who had sustained scientific activity and engaged in scientific discourse in the earlier years of the century. That the religion-science disputes form part of the story of science in Belfast is not in doubt, but it is only one part of a longer and more complex story, much of which remains to be told.

One additional point emerges from this analysis of geological and phrenological debate. Most obviously, it is clear that these knowledge-systems were the subject of extensive discussion and that Belfast was not a provincial backwater, but a networked locale, linked through personal relationships, scientific exchange and print culture to wider British and Atlantic scientific communities. Given these links, it is perhaps unsurprising that scientific debate in late-Georgian Belfast bore many similarities with that which took place elsewhere in Britain. This is not, of course, to suggest that local circumstances played no role in shaping scientific discourse. As was clear in the geology dispute of 1832, practical considerations concerning what was said, where it was said and by whom it was said were important. Likewise, the particularities of Belfast's press-politics appear to have played a role in determining the development of

the debate over phrenology in the town, and the Ulster Presbyterians' penchant for the Baconian methodology ensured that questions pertaining to induction were never far from the surface when science was discussed. Yet, for all that, it remains the case that the broader questions raised when the people of Belfast discussed geology and phrenology – in particular, questions relating to materialism – were questions raised throughout Britain. That such far-reaching and potentially controversial questions were discussed in late-Georgian Belfast might, however, be said to be doubly significant. Significant insofar as they highlight the sophistication of scientific and metaphysical debate conducted in the town's papers; and significant in that they suggest a revision is required in the way we think about and discuss the religion-science encounter in nineteenth-century Belfast and beyond.

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¹ The following comments build on John van Wyhe, *Phrenology and the origins of Victorian scientific naturalism* (Ashgate, Aldershot, 2004), pp. 11-12.

² For an influential and pioneering discussion of scientific naturalism, see Frank Miller Turner, *Between science and religion: the reaction to scientific naturalism in late-Victorian England* (Yale University Press, New Haven, 1974), pp. 8-37.

³ See, for example, Timothy Larsen's provocative counter-narrative, *Crisis of doubt: honest faith in nineteenth-century England* (Oxford University Press, Oxford, 2006) and, for an interesting critique, David Nash, 'Reassessing the "crisis of faith" in the Victorian age: eclecticism and the spirit of moral inquiry', *Journal of Victorian Culture*, xvi, 65-82 (2011). See also Boyd Hilton, *A mad, bad, dangerous people: England, 1783-1846* (Oxford University Press, Oxford, 2006), pp. 441-42.

⁴ For a state-of-the-art expression of these arguments, see *Victorian scientific naturalism: community, identity, continuity* (ed. Gowan Dawson and Bernard Lightman) (University of Chicago Press, Chicago, 2014).

⁵ Hilton, *op. cit.* (note 3), pp. 441-42; James A. Secord, *Victorian sensation: the extraordinary publication, reception, and secret authorship of Vestiges of the Natural History of Creation* (University of Chicago Press, Chicago, 2000), p. 511.

⁶ Adrian Desmond, *Politics of evolution: morphology, medicine and reform in radical London* (University of Chicago Press, Chicago, 1989); van Wyhe, *op. cit.* (note 1).

⁷ Bernard Lightman, *Victorian popularizers of science: designing nature for new audiences* (University of Chicago Press, Chicago, 2009), p. 6. On the emergence of 'scientific naturalism' as an actor's category, see Gowan Dawson and Bernard Lightman, 'Introduction', in (ed. Dawson and Lightman), *op. cit.* (note 4), pp. 1-24 at 3-10.

⁸ On the 'religious' uses of scientific naturalism see David N. Livingstone, 'Finding revelation in anthropology: Alexander Winchell, William Robertson Smith and the heretical imperative', *British Journal for the History of Science* **48**, 435-54 (2015).

⁹ John Tyndall, *Address delivered before the British Association assembled at Belfast* (Longman's, Green, and Co., London, 1874).

¹⁰ David N. Livingstone, 'Darwin in Belfast: the evolution debate', in *Nature in Ireland: a scientific and cultural history* (ed. John Wilson Foster and Helena C. G. Chesney), pp. 387-408 (Lilliput Press, Dublin, 1997), at pp. 403-5; John Wilson Foster, *Recoveries: neglected episodes in Irish cultural history, 1860-1912* (University College Dublin Press, Dublin, 2002), pp. 7-48; Andrew R. Holmes, 'Presbyterians and science in the north of Ireland before 1874', *British Journal for the History of Science* **xli**, 541-565 (2008). See also, on the nature of Tyndall's speech, Ruth Barton, 'John Tyndall, pantheist: a rereading of the Belfast Address', *Osiris*, 2nd series **iii**, 111-34 (1987).

¹¹ John Anderson, *History of the Belfast Library and Society for Promoting Knowledge, commonly known as the Linen Hall Library, chiefly taken from the minutes of the society and published in connection with the centenary celebration in 1888* (M'Caw, Stevenson and Orr, Belfast, 1888); [BLS], *Belfast Literary Society, 1801-1901: historical sketch, with some memoirs of distinguished members* (M'Caw Stevenson and Orr, Ltd. The Linenhall Press, Belfast, 1902); A. Albert Campbell, *Belfast Naturalists' Field Club: its origins and progress* (Hugh Greer, Belfast, 1938); [BNHPS], *Centenary volume, 1821-1921: a review of the activities of the society for 100 years with historical notes, and memoirs of many distinguished members* (ed. Arthur Deane) (Belfast Natural History and Philosophical Society, Belfast, 1924); John Magee, *The Linen Hall Library and the cultural life of Georgian Belfast* (Library Association of Ireland and Library Association Northern Ireland Branch, 1982); John Killen, *A history of the Linen Hall Library, 1788-1988* (Linen Hall Library, Belfast, 1990); Foster, *op. cit.* (note 9), pp. 91-137.

¹² See, for instance, Ruth Bowman Bayles, 'Science in its local context: the Belfast Natural History and Philosophical Society', PhD thesis, Queen's University Belfast (2005); Ruth Bowman Bayles, 'The Belfast Natural History Society in the nineteenth century: a communication hub', in *Belfast: the emerging city, 1850-1914* (ed. Olwen Purdue), pp. 105-24 (Irish Academic Press, Dublin, 2012); Diarmid A. Finnegan and Jonathan Jeffrey Wright, 'Catholics, science and civic culture in Victorian Belfast', *British Journal for the History of Science* **48**, 261-87 (2015); and Jonathan Jeffrey Wright, '"A depot for the productions of the four quarters of the globe": empire, collecting and the Belfast Museum', in *Spaces of global knowledge: exhibition, encounter and exchange in an age of empire* (ed. Diarmid A. Finnegan and Jonathan Jeffrey Wright), pp. 143-66 (Farnham, Ashgate, 2015).

¹³ James A. Secord, 'Knowledge in transit', *Isis* **95**, 654-72 (2004), at p. 659.

¹⁴ See, for the concept of 'translocality', Katherine Brickell and Ayona Datta, 'Introduction: translocal geographies', in *Translocal geographies: spaces, places, connections* (ed. Katherine Brickell and Ayona Datta), pp. 3-20 (Ashgate, Farnham, 2011).

¹⁵ The location/locution pairing is David N. Livingstone's. See David N. Livingstone, 'Science, site and speech: scientific knowledge and the spaces of rhetoric', *History of the Human Sciences* **xx**, 71-98 (2007), at p. 75 and, for further development and application of the concept, Diarmid A. Finnegan, 'Placing science in an age of oratory: spaces of scientific speech in mid-Victorian Edinburgh', in *Geographies of nineteenth-century science* (ed. David N. Livingstone and Charles W. J. Withers), pp. 153-77 (University

of Chicago Press, Chicago, 2011).

¹⁶ Secord, *op. cit.* (note 13), pp. 659, 660 and 664.

¹⁷ Peter Bowler, *The Fontana history of the environmental sciences* (Fontana Press, London, 1992), p. 193.

¹⁸ Roy Porter, *The making of geology: earth science in Britain, 1660-1815* (Cambridge University Press, Cambridge, 1977), p. 3. For the popularization of geology through print, see O'Connor, *The earth on show: fossils and the poetics of popular science, 1802-1856* (University of Chicago Press, Chicago, 2007).

¹⁹ Porter, *op. cit.* (note 18), pp. 128-215; Bowler, *op. cit.* (note 17), pp. 237-45. On the acceptance of Lyell's geology among 'intellectual Anglicans' and on Lyell's own religious beliefs, see Martin Rudwick, *Worlds before Adam* (University of Chicago Press, Chicago, 2008), pp. 320-21 and 343-46.

²⁰ John Wilson Foster, 'Encountering traditions', in (ed. Foster and Chesney), *op. cit.* (note 10), pp. 23-70 at p. 63.

²¹ J. G. O'Connor and A. J. Meadows, 'Specialization and professionalization in British geology', *Social Studies of Science* vi, 77-89 (1976), at p. 83; Porter, *op. cit.* (note 18), pp. 128-56; Martin J. S. Rudwick, *The great Devonian controversy: the shaping of scientific knowledge among gentlemanly specialists* (University of Chicago Press, Chicago, 1988), pp. 18-27. For the Geological Society of London in particular, see the essays collected in *The making of the Geological Society of London* (ed. Cherry L. E. Lewis and Simon J. Knell) (Geological Society of London, London, 2009).

²² Anderson, *op. cit.* (note 11), pp. 15, 27-28, 36, 39, 44, 50.

²³ [BLS], *op. cit.* (note 11), pp. 12, 14-15, 25, 170, 174, 182; John Jamieson, *The History of the Royal Belfast Academical Institution, 1810-1960* (Wm. Mullan & Son, Belfast, 1959), p. 12; Joseph R. Fisher and John H. Robb, *Centenary volume, 1810-1910* (M'Caw, Stephenson & Orr, Belfast, 1913), p. 60. For Richardson, see Allan Blackstock, 'Making hay when the sun don't shine: the Rev. William Richardson, science and society in early nineteenth-century Ireland', *Irish Historical Studies*, xxxvii, 396-411 (2011) and Allan Blackstock, *Science, politics and society in early nineteenth-century Ireland* (Manchester University Press, Manchester, 2013).

²⁴ William Knight, *Facts and observations towards forming a new theory of the earth* (Archibald Constable & Co., Edinburgh, 1818), pp. 152-61.

²⁵ Alasdair Kennedy, 'Placing the Giant's Causeway: venue, sights and geographies of knowledge', PhD thesis, Queen's University Belfast (2008) and Alasdair Kennedy, 'In search of the "true prospect": making and knowing the Giant's Causeway as a field site in the seventeenth century', *British Journal for the History of Science* xli, 19-41 (2008), at p. 20.

²⁶ Drummond was actively involved in the affairs of the Belfast Literary Society until 1815, in which year he left Belfast for Dublin. [BLS], *op. cit.* (note 11), pp. 37-39, 163.

²⁷ Noah Heringman, *Romantic rocks, aesthetic geology* (Cornell, University Press, Ithaca, 2004), pp. 157-58, 200-05. See also John Wilson Foster, 'The topographical tradition in Anglo-Irish poetry', *Irish University Review* iv, 169-87 (1974), at pp. 185-87. Foster, *op. cit.* (note 20), pp. 63-66.

²⁸ John Gamble, *Society and manners in early nineteenth-century Ireland* (ed. Breandán Mac Suibhne) (Field Day, Dublin, 2011), p. 270.

²⁹ William Hamilton Drummond, *The Giants' Causeway: a poem* (Joseph Smith, Belfast, 1811), v-xxvii (preface), 106-200 (notes), 71-103 (third book); Foster, *op. cit.* (note 20), pp. 63-4.

³⁰ [BLS], *op. cit.* (note 11), pp. 170, 182.

³¹ Patrick N. Wyse Jackson, 'Tumultuous times: geology in Ireland and the debate on the nature of basalt and other rocks of the north-east Ireland between 1740 and 1816', in *Science and engineering in Ireland in 1798: a time of revolution* (ed. Patrick N. Wyse Jackson), pp. 35-50 (Royal Irish Academy, Dublin, 2000), at pp. 40-45; Patrick N. Wyse Jackson, *The chronologers' quest: the search for the age of the*

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³² Minute book, 1821-1830 (PRONI, BNHPS papers, D/3263/AB/1), entry for 5 June 1821. [BNHPS], *op. cit.* (note 11), p. 2.

³³ Analyses of papers read, 1821-1829 (PRONI, BNHPS papers, D/3263/J/2A), 3-4, 7, 11-12, 39-40, 79, 89, 121, 166-67, 172-73, 297, 305, 312; Analyses of papers read, 1830-1840 (PRONI, BNHPS papers, D/3263/J/2B), unpaginated, abstracts xix and xxii; [BNHPS], *op. cit.* (note. 11), pp. 65-66, 89, 121, 129, 142.

³⁴ The BAI's first Professor of Natural Philosophy and Chemistry, Ure left after just two years. Jamieson, *op. cit.* (note 23), p. 12; Fisher and Robb, *op. cit.* (note 23), pp. 58-60.

³⁵ W. V. Farrar, 'Andrew Ure, F.R.S., and the philosophy of manufactures', *Notes and Records of the Royal Society* xxvii, 299-324 (1972-3), at pp. 311-12. For more on Ure see Ralph O'Connor, 'Young-earth creationists in early nineteenth-century Britain? Towards a reassessment of 'scriptural geology'', *History of Science* xlv, 357-403 (2007), passim and O'Connor, *op. cit.* (note. 18), pp. 144-50

³⁶ Farrar, *op. cit.* (note. 35), pp. 312-13.

³⁷ Lyell quoted in O'Connor, *op. cit.* (note. 18), p. 164.

³⁸ Analyses of papers read, 1821-1829 (PRONI, BNHPS papers, D/3263/J/2A), 3-4, 297, 312; Analyses of papers read, 1830-1840 (PRONI, BNHPS papers, D/3263/J/2B), unpaginated, abstract xxii.

³⁹ *The Weekly Scotsman*, 14 July 1877; [BNHPS], *op. cit.* (note. 11), pp. 66, 89.

⁴⁰ James Bryce, 'Notice of the discovery of the Plesiosaurus in Ireland', *The Philosophical Magazine* ix, 331-32 (1831).

⁴¹ O'Connor, *op. cit.* (note 18), pp. 117-18.

⁴² *Belfast News-Letter*, 14 June 1831.

⁴³ [BLS], *op. cit.* (note. 11), p. 88; [BNHPS], *op. cit.* (note 11), pp. 65-66, 89.

⁴⁴ Minute book, 1821-1830 (PRONI, BNHPS papers, D/3263/AB/1), entries for 8 and 22 July 1824; *Northern Whig*, 15 July 1824; *The European journals of William Maclure* (ed. John S. Doskey) (American Philosophical Society, Philadelphia, 1988), xv, xvii, xxix-xl, 707-09, 713, 801. For Silliman, Maclure and the early development of American geology, see Julie R. Newell, 'A story of things yet-to-be: the status of geology in the United States in 1807', in (ed. Lewis and Knell), *op. cit.* (note 21), pp. 213-18.

⁴⁵ Minute book, 1821-1830 (PRONI, BNHPS papers, D/3263/AB/1), entries for 8 and 22 July 1824; 8 December 1824; 30 August 1825; 1 February 1826; 5 and 19 July 1826; 24 May 1827; 7 and 20 June 1827; Patrick N. Wyse Jackson, 'Sir Charles Lewis Giesecke (1761-1833) and Greenland: a recently discovered mineral collection in Trinity College, Dublin', *Irish Journal of Earth Sciences* xv, 161-68 (1996), at pp. 161-62; Andrew Newman, 'Hutton, William (1797-1860)', in *Oxford dictionary of national biography* (ed. H.C.G. Matthew and Brian Harrison) xxix, 83-84 (60 vols, Oxford University Press, Oxford, 2004).

⁴⁶ Bowler, *op. cit.* (note 17), pp. 237-45. To highlight the comparability of catastrophism with religious belief is not to suggest that catastrophism itself was religious, or that all catastrophists sought simply to defend the Mosaic narrative. On this, see Rudwick, *op. cit.* (note 19).

⁴⁷ On the 'Baconian compromise', see James R. Moore, 'Geologists and interpreters of Genesis in the nineteenth century', in *God and nature: historical essays on the encounter between Christianity and science* (ed. David C. Lindberg and Ronald L. Numbers), 322-350 (University of California Press, Berkeley, 1992).

⁴⁸ Analyses of papers read, 1830-1840 (PRONI, BNHPS papers, D/3263/J/2B), unpaginated, abstracts xxii and xlii; *Belfast News-Letter*, 24 February 1832.

⁴⁹ *Belfast News-Letter*, 24 February 1832.

⁵⁰ *Ibid.*

⁵¹ Edgar's letter appeared pseudonymously, under the name 'A Hearer', but he later identified himself as its author. *Belfast News-Letter*, 6 and 13 January 1832. For Edgar's life and career see W. D. Killen, *Memoir of John Edgar, D.D., LL.D., professor of systematic theology for the General Assembly of the Presbyterian Church in Ireland* (C. Aitchison, Belfast, 1867) and W. D. Killen (ed.), *Select works of John Edgar, D.D., LL.D.* (Belfast, 1868).

⁵² *Belfast News-Letter*, 27 December 1831.

⁵³ *Ibid.*, 6 January 1832. For MacCormac and his views see Ian Fraser, 'Father and son – a tale of two cities', *Ulster Medical Journal* xxxvii, 1-39 (1968); *Dictionary of Irish philosophers* (ed. Thomas Duddy) (Dublin, 2004), pp. 211-13; Vincent Geoghegan, 'Robert Owen, co-operation and Ulster in the 1830s', in *Politics and the Irish working class, 1830-1945* (ed. Fintan Lane and Donal Ó Drisceoil), pp. 6-26 (Palgrave MacMillan, Basingstoke, 2005).

⁵⁴ Killen, *Memoir*, *op. cit.* (note 51), p. 16; *Belfast News-Letter*, 6 January 1832.

⁵⁵ *Belfast News-Letter*, 6 January 1832.

⁵⁶ *Ibid.*, 6 and 13 January 1832.

⁵⁷ Livingstone, *op. cit.* (note 15), *passim*.

⁵⁸ *Belfast News-Letter*, 7, 14, 24 and 28 February, 6 and 9 March and 17 April 1832.

⁵⁹ *Ibid.*, 17 January 1832; Dennis R. Dean, 'Jameson, Robert (1774-1854)' in (ed. Matthew and Harrison) *op. cit.* (note 45), xxix, 763-65.

⁶⁰ *Belfast News-Letter*, 24 and 27 January 1832

⁶¹ *Ibid.*, 27 and 31 January 1832. [BNHPS], *op. cit.* (note 11), pp. 72-73; Jamieson, *op. cit.* (note 23), pp. 68-70.

⁶² [BNHPS], *op. cit.* (note 11), pp. 101-02; Jamieson, *op. cit.* (note 23), p. 64.

⁶³ *Belfast News-Letter*, 3 February 1832.

⁶⁴ *Ibid.*, 17 January 1832.

⁶⁵ *Ibid.*, 24 January 1832.

⁶⁶ Holmes, *op. cit.* (note 10), pp. 552, 553.

⁶⁷ James Emerson Tennent to Robert James Tennent, 9 February 1832 (PRONI, Tennent papers, D/1748/G/661/99); Killen, *Memoir op. cit.* (note 51), p. 24. For Killen himself see William Dool Killen, *Reminiscences of a long life* (Hodder and Stoughton, London, 1901).

⁶⁸ O'Connor, *op. cit.* (note 35), pp. 361, 368.

⁶⁹ *Ibid.*, p. 373.

⁷⁰ *Belfast News-Letter*, 24 January and 3 February 1832.

⁷¹ *Ibid.*, 3 February 1832; O'Connor, *op. cit.* (note 35), p. 388.

⁷² *Belfast News-Letter*, 3 February 1832; O'Connor, *op. cit.* (note 35), pp. 366, 367, and 397 n. 62. Note, that Edgar's rendering of this quote conforms to the 1825 edition of Sumner's *Treatise*. In earlier versions the word 'ascertain' is give as 'ascertained'. See John Bird Sumner, *A treatise on the records of the creation and on the moral attributes of the creator*, second edition (2 vols, J. Hatchard, London, 1818), i, 356-57 and John Bird Sumner, *A treatise on the records of the creation and on the moral attributes of the creator*, fourth edition (2 vols, J. Hatchard and Son, London, 1825), i, 341-42.

⁷³ George Bugg, *Scriptural geology: or, geological phenomena, consistent only with the literal interpretation of the Sacred Scriptures, upon the subjects of the creation and Deluge; in answer to an "Essay on the theory of the earth"* (2 vols, Hatchard & Son, London, 1827), ii, 345.

⁷⁴ *Belfast News-Letter*, 13 January 1832. Emphasis ours.

⁷⁵ *Ibid.*, 24 January 1832

⁷⁶ *Ibid.*, 27 January 1832.

⁷⁷ Jamieson, *op. cit.* (note 23), pp. 23-35, 36-47; Finlay Holmes, *Henry Cooke* (Christian Journals Limited, Belfast, 1981), pp. 13-18, 22-26, 30-44 (p. 23 for quote); Finlay Holmes, *Our Irish Presbyterian heritage* (Publications Committee of the Presbyterian Church in Ireland, Belfast, 1985), pp. 97-101; Jonathan Jeffrey Wright, *The 'natural leaders' and their world: politics, culture and society in Belfast, c. 1801-1832* (Liverpool University Press, Liverpool, 2012), pp. 160-70.

⁷⁸ Andrew R. Holmes, 'From Francis Hutcheson to James McCosh: Irish Presbyterian and defining the Scottish Philosophy in the nineteenth century', *History of European Ideas* **40**, 622-43 (2014), at pp. 633-636. See also Jamieson, *op. cit.* (note 23), pp. 49-53; Holmes, *Henry op. cit.* (note 77), pp. 68-73, 125-127.

⁷⁹ *Belfast News-Letter*, 13 January 1832.

⁸⁰ *Ibid.*, 17 January 1832.

⁸¹ James Emerson Tennent to Robert James Tennent, 18 January 1832 (PRONI, Tennent papers, D/1748/G/661/97).

⁸² *Belfast News-Letter*, 17 February 1832.

⁸³ See, on Nashoba, Carole A. Kolmerten, *Women in utopia: the ideology of gender in the American Owenite communities* (Syracuse University Press, New York, 1998), pp. 120-21 and Gail Bederman, 'Revisiting Nashoba: slavery, utopia, and Francis Wright in America, 1818-1826', *American Literary History* **17**, 438-459 (2005).

⁸⁴ *Ibid.*, 9 March 1832.

⁸⁵ *Ibid.*, 16 March 1832.

⁸⁶ Geoghegan, *op. cit.* (note. 53), pp. 18-20. For the 1832 cholera epidemic see Nigel Sean Farrell, 'Asiatic cholera and the development of public health in Belfast, 1832-1878' PhD thesis, University of Ulster (2014), pp. 39-93.

⁸⁷ *Belfast News-Letter*, 13 January 1832.

⁸⁸ Roger Cooter, *The cultural meaning of popular science: phrenology and the organization of consent in nineteenth-century Britain* (Cambridge University Press, Cambridge, 1984), p. 3.

⁸⁹ David de Giustino, *Conquest of mind: phrenology and Victorian social thought* (Croom Helm, London, 1975); Cooter, *op. cit.* (note 88); Geoffrey N. Cantor, 'The Edinburgh phrenology debate: 1801-1828', *Annals of Science* **xxxii**, 195-212 (1975); Steven Shapin, 'Phrenological knowledge and the social structure of early nineteenth-century Edinburgh', *Annals of science* **xxxii**, 218-43 (1975); James A. Secord, 'Behind the veil: Robert Chambers and *Vestiges*', in *History, humanity and evolution: essays for John C. Greene* (ed. James R. Moore), pp. 165-94 (Cambridge University Press, Cambridge, 1989); John van Wyhe, *op. cit.* (note 1); John van Wyhe, 'The diffusion of phrenology through popular lecturing', in *Science in the marketplace: nineteenth-century sites and experiences* (ed. Aileen Fyfe and Bernard Lightman), pp. 60-96, *Science in the marketplace: nineteenth-century sites and experiences* (University of Chicago Press, Chicago, 2007). Irish historians have, as Juliana Adelman and Éadaoin Agnew have noted, been 'slower to embrace' the study of 'marginal' or 'unscientific' forms of knowledge and there is thus only one, article-length, treatment of phrenology in the Irish context. See Juliana Adelman and Éadaoin Agnew, 'Introduction', in *Science and technology in nineteenth-century Ireland* (ed. Juliana Adelman and Éadaoin Agnew), pp. 11-17 (Four Courts, Dublin, 2011), at pp. 12-13 and Enda Leaney, 'Phrenology in nineteenth-century Ireland', *New Hibernia Review* **x**, 24-42 (2006).

⁹⁰ Hewett Cottrell Watson, *Statistics of phrenology: being a sketch of the progress and present state of that science in the British islands* (Longman, Rees, Orme, Brown, Green, and Longman, London, 1836), 109-68; de Giustino, *op. cit.* (note 89), pp. 80-81.

⁹¹ Secord, *op. cit.* (note 89), p. 172; Secord, *op. cit.* (note. 5), p. 87; van Wyhe, *op. cit.* (note 1), p. 11.

⁹² Cooter, *op. cit.* (note 88), p. 7; van Wyhe, *op. cit.* (note 1), pp. 23, 26-27.

⁹³ Anon., 'Foreign Literature', *Belfast Monthly Magazine* **iii**, 132-42 (1809), at p. 139. For the *Belfast*

Monthly Magazine see Wright, *op. cit.* (note 77), pp. 67-75.

⁹⁴ van Wyhe, *op. cit.* (note 1), pp. 33-34.

⁹⁵ van Wyhe, *op. cit.* (note 1), p. 23.

⁹⁶ Samuel Taylor Coleridge, *Aids to reflection in the formation of a manly character on the several grounds of prudence, morality, and religion: illustrated by select passages from our elder divines, especially from Archbishop Leighton* (Taylor and Hessey, London, 1825), 147. For Spurzheim's visits see van Wyhe, *op. cit.* (note 89).

⁹⁷ Cooter, *op. cit.* (note 88), pp. 101-33 (101, 102 and 121 for quotes) provides an excellent account of Combe's attraction to, and role in disseminating, phrenology, but see also van Wyhe, *op. cit.* (note 1), pp. 52-56.

⁹⁸ Cooter, *op. cit.* (note. 88), p. 5.

⁹⁹ *Northern Whig*, 22 July 1824.

¹⁰⁰ A founding member of the BNHPS, Patterson was later to secure renown in the field of zoology. For a biographical sketch see [BNHPS], *op. cit.* (note. 11), pp. 94-95.

¹⁰¹ Analyses of papers, 1821-1829 (PRONI, BNHPS Papers, D/3263/J/2A), 83.

¹⁰² Robert Patterson to Robert James Tennent, 25 February 1827 (PRONI, Tennent papers, D/1748/G/532/1).

¹⁰³ Whether or not Robert James Tennent was a founding member of the Belfast Phrenological Society is unclear, but his involvement in it is illustrated by the following documents: Dr Robert McKibbin to Robert James Tennent, undated (early 1827) (PRONI, Tennent papers, D/1748/G/413/1); James Kennedy Blair to Robert James Tennent, 2 May 1827 (PRONI, Tennent papers, D/1748/G/56/3); 'Notes and paper on phrenology c. 1827' (PRONI, Tennent papers, D/1748/G/761). For his membership of the BNHPS see Minute book, 1821-30 (PRONI, BNHPS papers, D/3263/AB/1), entry for 1 February 1826.

¹⁰⁴ Minute book, 1821-30, (PRONI, BNHPS papers, D/3263/AB/1), entry for 30 December 1828;

Watson, *op. cit.* (note 90), pp. 115-16.

¹⁰⁵ Minute book, 1821-30, (PRONI, BNHPS papers, D/3263/AB/1), entry for 14 January 1829; Watson, *op. cit.* (note. 90), pp. 115-16.

¹⁰⁶ Watson, *op. cit.* (note 90), p. 115; Wright, *op. cit.* (note. 77), pp. 154-55.

¹⁰⁷ Watson, *op. cit.* (note 90), p. 115.

¹⁰⁸ van Wyhe, *op. cit.* (note 89), pp. 60, 67.

¹⁰⁹ *Northern Whig*, 10 June 1830.

¹¹⁰ *Belfast News-Letter*, 28 May 1830; Watson, *op. cit.* (note 90), p. 124.

¹¹¹ Johann Gasper Spurzheim to Managers of the Belfast Academical Institution, 19 June 1830 (PRONI, Royal Belfast Academical Institution papers, SCH/524/7B/24/20); Andrew Carmichael, *A memoir of the life and philosophy of Spurzheim* (Marsh, Capen & Lyon, and Lilly, Wait & Co, Boston, 1833), p. 40; David N. Livingstone, *Putting science in its place: geographies of scientific knowledge* (University of Chicago Press, Chicago, 2003), pp. 5-12.

¹¹² *Belfast News-Letter*, 28 May 1830; Carmichael, *op. cit.* (note. 111), p. 40.

¹¹³ Carmichael, *op. cit.* (note. 111), p. 40; *Belfast News-Letter*, 8 June 1830.

¹¹⁴ *Northern Whig*, 3 June 1830.

¹¹⁵ *Ibid.*, 7 June 1830.

¹¹⁶ *Ibid.*

¹¹⁷ *Belfast News-Letter*, 4 June 1830.

¹¹⁸ *Ibid.*, 8 June 1830 (see also 15 June 1830).

¹¹⁹ *Ibid.*, 8 June 1830.

¹²⁰ Anon., 'Interesting observations relative to injuries sustained in the human brain', *Newry Magazine; or, Literary and Political Register* i, 68-71 (1815); *Guardian and Constitutional Advocate*, 18 June 1830.

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- ¹²¹ Cooter, *op. cit.* (note 88), p. 3.
- ¹²² *Guardian and Constitutional Advocate*, 25 June 1830.
- ¹²³ [Presbyterian Historical Society of Ireland], *Extracts from original letters of James McKnight, L.L.D.: litterateur and land reformer, editor of "Belfast News-Letter," and "Londonderry Standard"* (Belfast, 1916), p. 4. Cooter, *op. cit.* (note 88), pp. 46-47. For a recent discussion of phrenology's links with reform, see James Poskett, 'Phrenology, correspondence, and the global politics of reform, 1815-1848', *Historical Journal* **60**, 409-442 (2017).
- ¹²⁴ *Guardian and Constitutional Advocate*, 25 June 1830.
- ¹²⁵ *Ibid.*, 25 June, 29 June, 2 July, 6 July and 13 July 1830; *Belfast News-Letter*, 29 June and 13 July 1830.
- ¹²⁶ *Belfast News-Letter*, 8 June 1830.
- ¹²⁷ *Ibid.*, 29 June 1830.
- ¹²⁸ *Ibid.*
- ¹²⁹ *Guardian and Constitutional Advocate*, 25 June 1830.
- ¹³⁰ *Belfast News-Letter*, 29 June 1830.
- ¹³¹ Cooter, *op. cit.* (note 88), p. 73. See also Daniel P. Thurs, 'Scientific methods', in *Wrestling with nature: from omens to science* (ed. Peter Harrison, Ronald L. Numbers and Michael H. Shank), pp. 307-36 (Chicago, 2011), at pp. 312-14.
- ¹³² Holmes, *op. cit.* (note 10), p. 552.
- ¹³³ *Belfast News-Letter*, 29 June 1830.
- ¹³⁴ [Presbyterian Historical Society of Ireland], *op. cit.* (note 123), pp. 1-4; Wright, *op. cit.* (note. 77), pp. 164-70; Holmes, *op. cit.* (note 78), pp. 628-30.
- ¹³⁵ Thomas MacKnight, *Ulster as it is or twenty-eight years' experience as an Irish editor* (2 vols, Macmillan, London, 1896), i, 100.
- ¹³⁶ Sean Dyde 'George Combe and common sense', *British Journal for the History of Science* **48**, 233-59 (2015).
- ¹³⁷ [Presbyterian Historical Society of Ireland], *op. cit.* (note 123), p. 4.
- ¹³⁸ *Guardian and Constitutional Advocate*, 2 and 6 July 1830.
- ¹³⁹ John A. Crozier, *The life of the Rev. Henry Montgomery, LL.D. ... with selections from his speeches and writings* (E.T. Whitfield and Simpkin, Marshall and Co., London, 1875), i, 390.
- ¹⁴⁰ Alexander Gordon, 'Blakely, Fletcher (1783-1862),' rev. David Huddleston, in (ed. Matthew and Harrison) *op. cit.* (note 45), vi, 131-32; Leaney, *op. cit.* (note 89), pp. 27-30, 34, 42.
- ¹⁴¹ *Guardian and Constitutional Advocate*, 25 June 1830.
- ¹⁴² *Ibid.*, 6 July 1830.
- ¹⁴³ *Ibid.*, 13 July 1830.
- ¹⁴⁴ *Ibid.*
- ¹⁴⁵ *Testimonials on behalf of George Combe, as a candidate for the chair of logic in the University of Edinburgh* (John Anderson Jun, Edinburgh, 1836), p. 8.
- ¹⁴⁶ Henry MacCormac, *The Philosophy of Human Nature* (Longman, Rees, Orme, Brown, Green, & Longman, London, 1837), p. 250.
- ¹⁴⁷ George Combe, *The constitution of man considered in relation to external objects*, sixth edition (John Anderson Jun, Edinburgh, 1836), pp. 87ff.